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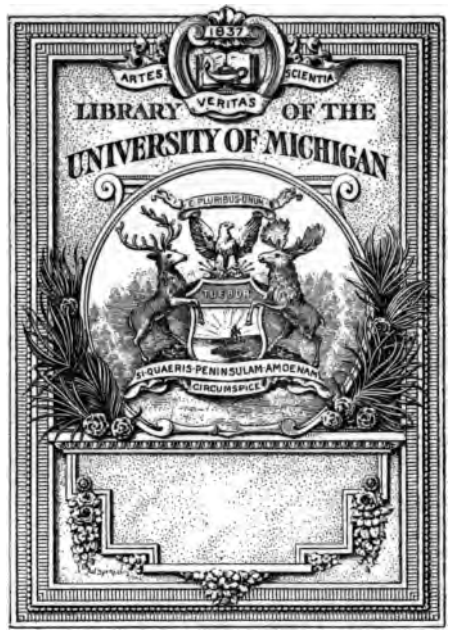

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TRANSACTIONS

OF THE

MINNESOTA

State Medical Society,

1892.

ST. PAUL:
NORTHWESTERN LANCET.
1892

OFFICERS OF THE SOCIETY.

PRESIDENT:
A. W. ABBOTT, M. D.

FIRST VICE PRESIDENT:
W. A. JONES, M. D.

SECOND VICE-PRESIDENT:
W. J. MAYO, M. D.

THIRD VICE-PRESIDENT:
A. E. SPAULDING, M. D.

SECRETARY:
C. B. WITHERLE, M. D.

TREASURER:
R. J. HILL, M. D.

CENSORS:

FOR THREE YEARS—W. W. MAYO, M. D.
FRANKLIN STAPLES, M. D.

FOR TWO YEARS— A. J. STONE, M. D.
J. H. DUNN, M. D.

FOR ONE YEAR— C. F. McCOMB, M. D.
PARK RITCHIE, M. D.

Hennepin County
Medical Society Library.

PROCEEDINGS

—OF THE—

TWENTY-FOURTH ANNUAL MEETING

—OF THE—

MINNESOTA STATE MEDICAL SOCIETY.

The Twenty-fourth Annual Meeting of the Minnesota State Medical Society was held in the State Capitol, St. Paul, being called to order by President RITCHIE at 10 o'clock A. M., June 15th, 1892.

Prayer was offered by Rev. S. G. Smith, D. D., of St. Paul.

It was moved and seconded that a competent stenographer be employed. Motion carried and Mr. J. H. Savage, of Minneapolis, was employed as stenographer.

Dr. CHAMBERLIN, Chairman of the Executive Committee, announced the programme of the meeting, also a banquet tendered to the Society by the Ramsey County Medical Society, and receptions to be given by Drs. A. J. STONE and C. WILLIAMS.

The Secretary read the following report of the Committee on Incorporation:

At the last annual meeting the President and Secretary were instructed by vote of the Society to take measures for incorporation. They employed the services of an attorney, Mr. Geo. L. Bunn, to draw up articles of incorporation. When these articles were taken for filing to the office of Secretary of State, it was found that articles had been filed in 1869 incorporating a Minnesota State Medical Society, signed by five physicians, members of our Society, These articles, however, had not been filed with the Register of Deeds as required by law, and furthermore there is nothing in the records of the Society to show that it ever took further action in the matter towards consummating the incorporation. It is Mr. Bunn's opinion, therefore, that the incorporation of 1869 is of

160580

doubtful validity and if valid that the corporation only consists of the surviving signers of the old articles.

On laying these facts before the Secretary of State, he has consented to receive new articles of incorporation under the same name as the old Society. Such articles have been filed as follows:

ARTICLES OF INCORPORATION.

We, the persons whose names are subscribed, hereby associate ourselves for the purpose of forming a corporation under Title 3, Chapter 34, of the General Statutes of 1878 and the acts amendatory thereof.

ARTICLE I.

The name of this corporation shall be "The Minnesota State Medical Society." Its general purpose and plan of operation are the association of the medical profession upon a basis of good fellowship; the maintenance of harmony and good government among its members; the cultivation of medical science and literature; and the elevation of the standards of medical education. The place of location of said corporation shall be the City of St. Paul, Minnesota.

ARTICLE II.

The terms of admission to membership in this corporation are as follows: All persons who are now members in good standing of the un-incorporated society known as "The Minnesota State Medical Society" may become members of this corporation on assenting thereto and signifying such assent in writing, without any further act. Any regular physician of good professional attainment and moral character who shall hold the certificate of the State Board of Medical Examiners for Minnesota or its legal equivalent and shall have been in the active practice of his profession in this State for not less than six months prior to his nomination, may become an active member of this incorporation. Any regular physician of good professional character and attainments may become an honorary member of this corporation. The names of all candidates for honorary or active membership must be presented in writing to a committee on membership which shall pass upon their qualifications for admission and report them to the corporation at a regular or special meeting for election. They shall be elected by written ballot by a majority vote of the members present at such meeting. Every person hereafter elected to membership in this corporation shall before assuming his membership pay an initiation fee

of three dollars and his annual dues. The amount of dues or contribution required of the members of this corporation is the sum of two dollars, payable annually.

ARTICLE III.

The officers of this corporation shall be a President, three Vice-Presidents, a Secretary, a Treasurer and a Board of Censors, consisting of six members and the third Vice-President, ex-officio. The President, Vice-Presidents, Secretary and Treasurer shall be elected at the first annual meeting of the corporation to be held on the third Wednesday in June, 1892, at St. Paul, Minnesota, and annually thereafter at the regular annual meetings of the corporation alternately at Minneapolis and St. Paul, Minnesota. The six censors shall be elected at said first annual meeting at St. Paul, two for three years, two for two years and two for one year, and at each succeeding annual meeting, two censors shall be elected for three years to fill the places of those whose terms of office have expired.

In witness whereof we have hereunto signed our names this 6th day of June, 1892.

PARK RITCHIE.
TALBOT JONES.
W. E. HALLOWELL.
GUSTAV A. RENZ.
CHARLES B. WITHERLE.

To legally perfect the incorporation the following course is recommended under the advice of Mr. Bunn:

That at the close of this session, the members now present come to the Secretary's desk to sign the articles. That at the afternoon session to-day, the President call the corporation to order, which shall then immediately adjourn until Friday morning, when the officers of the corporation shall be elected. This course is necessary to comply with the articles, which specify that the first meeting shall be held on the 15th of June. It will be understood that at the present moment the corporation, though already formed, consists only of the few members who have signed the articles.

PARK RITCHIE
C. B. WITHERLE.

On motion, the above report was unanimously adopted.

Dr. R. J. HILL moved the re-instatement of Drs. MARTINDALE and SHRADER who had been dropped for non-payment of dues.

Motion duly seconded and carried.

Dr. HOLMES read the report of Committee on Revision of Constitution as follows:

The Committee on the Revision of the Constitution and By-laws recommends the following changes:

To add as an amendment to Art. IV:

"All candidates for active or honorary membership residing in any county in the state where a county medical society exists, shall present as one of their qualifications for admission a certificate from the secretary of the said county society that they are members in good standing."

Article V to be amended to read as follows:

"The officers of the Society shall be a President, three Vice-Presidents, a Secretary, a Treasurer and a Board of Censors consisting of six members. These officers shall be elected by ballot annually, the Censors to be chosen from the list of Ex-Presidents of the Society, two each year to serve for a period of three years except in 1892, when six shall be elected, to serve, two for three years, two for two years and two for one year. A majority of the vote cast shall elect.

[This amendment is printed as amended on Friday morning. As originally offered there were five censors and the terms were differently arranged].

Article VI to be amended to read as follows:

"The President shall annually appoint a Committee on Nomination, consisting of one member from each congressional district in the State, an Executive Committee, a Committee on New Members, a Committee on Finance, a Committee on Necrology, each consisting of five members, and a Committee of Censors of Papers, consisting of three members."

BY-LAWS.

To add as an amendment to No. 4:

"He shall be entitled to draw an annual salary of one hundred dollars and shall be required to furnish sureties in the sum of three thousand dollars, said sureties to be approved by the President and Secretary of the Society."

No. 9 to be amended to read as follows:

"The Committee on Finance shall inspect and audit the accounts of the Treasurer, and shall recommend such annual assessments over and above the annual fee, which shall be two

dollars, upon the members, as shall be necessary to meet incidental expenses."

No. 10 to be amended to read as follows:

"The Committee of Censors of Papers shall meet on the first of June. All papers offered to the Society shall be submitted to this committee which shall select such as have sufficient scientific and literary merit to warrant their presentation and shall assign these papers to their proper section. The papers so selected shall be read and published. The committee shall at once furnish to the Executive Committee a list of the papers accepted. Each member of the committee shall be paid twenty-five dollars annually. The transactions and papers of the Society shall be published in the 'Northwestern Lancet,' which shall be regarded as the official organ of the Society, upon the terms of an offer submitted by the 'Lancet' June 19, 1890, and the bound volume of the Transactions thus provided shall be sent by the Secretary to each member."

No. 12 to be amended to read as follows:

"The Chairman of each Section shall lay out the plan of its work and shall preside at its meetings."

To add as an amendment to No. 17:

"The Executive Committee shall have power to alter the regular order of business, provided that the changes be incorporated in the published program."

The Society then proceeded to the consideration of each proposed amendment separately.

Dr. TEAFFT moved the adoption of the first proposed amendment.

Motion seconded.

Dr. BEARD: I move as an amendment to that motion that one of the qualifications for membership in this Society shall be the endorsement of two physicians in actual practice, members of the State Society in the County from which the applicant comes. It seems to me that there are some great objections to the report, as made by the Committee, on this article of the Constitution.

Amendment seconded.

Dr. JACKSON: It seems to me that the amendment may be open to some objection. There are counties in which this Society has very few members. In a county with a membership

of seven it might be that a majority of them could, if they wished, debar the others.

Dr. FLINN: There are a great many counties represented in the State Society where there are not even three physicians, members of the Society. I know of counties where it would be impossible for a man to get the endorsement of two other physicians, because they do not reside in the county.

Dr. BURTON: I believe, in cases where there was no County Society, that the applicant might be recommended from the nearest County Society.

Dr. ANDREWS: I think that point is very well taken indeed. Now there is another point. I belong to the Minnesota Valley Medical Society, and I know there are some members of this State Medical Society who have been unable to enter that Society because the physicians there are better acquainted with one another than they are in the State Society. Now, this morning, we all voted on the admission of physicians about whom we know nothing. I think the motion should prevail.

Dr. FOSTER: It seems to me that if Dr. BEARD's amendment is adopted it will alter greatly the force of the amendment. I understand this is for the protection of the members of this Society. If we are going to endorse every member of our Society and make ourselves liable for their actions, we must protect ourselves by investigating the character of all the men who join the Society. I understand that even at present, in order to join the Society, that a certain endorsement is necessary, but this further endorsement which the committee has suggested is just what we want, it seems to me.

Dr. BEARD: I would like to change, with the consent of my second, my amendment in this respect, that the endorsement shall be by two members of the medical profession who shall be members of the State Society, not necessarily coming from the county in which the applicant resides.

Dr. BEARD's second then signified his assent.

The PRESIDENT then put the question of the amended resolution as offered by Dr. BEARD, and upon vote the Society declared the amendment lost.

The original amendment to the Constitution proposed by the Committee was then adopted by vote of the Society.

The amendments to Articles V and VI and Nos. 4 and 9 of the By-laws were adopted without discussion.

The following discussion occurred upon the proposed change in No. 10 of the By-laws:

Dr. JACKSON: In regard to that last amendment, I think it would be well to consider it a little. It seems to me it is hardly

necessary at present. I fear it will cripple the work of the Society for a few years at least.

Dr. HOLMES: I think it is a very wise provision, that contained in the amendment that there should be some inspection of the papers submitted before they are printed.

Dr. ANDREWS: I am heartily in favor of this amendment with this exception, I do not see the necessity of paying the inspectors a salary.

Dr. HOLMES: The object of that would be merely to cover their expenses. If they are selected from members who reside in the country their expenses would be considerable.

Dr. WM. DAVIS: It has been my experience that it is no light task to read the many papers that are offered this Society each year, and I think the provision for a salary of $25 apiece was put in advisedly. It will take the committee at least a day to do this work, it may take them more, and they ought to be compensated for it.

Dr. JACKSON: Why is not the chairman of each section a competent censor of the papers in his section.

Dr. ANDREWS: The objection to that is that the chairman of the section does not receive the papers before they come before the Society; another thing is he has not the prerogative to throw out any of the papers.

Dr. FULTON: The proposed plan has this great advantage: That it will induce members of the Society to prepare their papers on time.

The amendment was then voted upon and adopted.

The remaining amendments were adopted without discussion.

Dr. DAVIS: Mr. President, I rise to offer a resolution.

At a meeting of the Ramsey County Medical Society, held on May 30th last the following resolution was passed:

Whereas: It has heretofore proved extremely difficult under the laws of this State, as they now exist, to convict persons guilty of the crime of producing an abortion, and as the prevalence of this crime tends to bring the medical profession into question, and as this Society is desirous of taking steps to remedy this evil,

Now, therefore, be it resolved, that the President of this Society be, and is hereby authorized to employ such attorneys as he may think best, to examine the laws of this and other states for the prosecution and punishment of this crime, and in case they find that the laws of this state can be improved by amendment or otherwise to draft such amendments to, or such new laws, as in their judgment will render the law in that behalf more efficacious, such amendments or new laws to be submitted

to the State Medical Society in its meeting in this city on June 15th, 1892.

In accordance with that resolution I have employed an attorney to make the required examination. He says in his report: "The provisions of our code appear to me to be very full and complete, and I do not know that anything could be added to or taken from the provisions defining the different phases or degrees of the crime with advantage. * * * The most severe punishment inflicted in this state is a term of twenty years in the state prison. In most of the states whose laws I have examined this is the maximum punishment."

The attorney goes on to say, however, that there appears to be still in force in this state a special rule of evidence which reads as follows: "No conviction shall be had under sections one and two of this act upon the uncorroborated evidence of the woman."

This provision forms chapter 49 of the general laws of 1875. As is well known the immediate cause of the making of this provision was undoubtedly the fact that in the year preceding its passage, a physician in good standing in St. Paul was convicted of the crime of abortion, the verdict, in the opinion of many, not being sustained by sufficient evidence. The attorney further states that this special rule of evidence for cases where abortion is charged does not exist in most of the states whose laws he has examined, the ordinary rules of evidence prevailing. He therefore points out that if the Society wishes to facilitate conviction for the crime of abortion it may urge the distinct repeal of this special rule of evidence, which in his opinion is still in force, and he has accordingly drafted a suitable repealing act which I will presently read. In order to carry out the wishes of the Ramsey County Medical Society, Mr. President, I would therefore move the adoption of the following resolution:

Resolved: That the President of this Society appoint a committee of five to take measures to secure the passage by the next Legislature of the following bill:

An act to repeal chapter forty-nine of the general laws of the year eighteen hundred and seventy-five entitled "An act to amend chapter nine of the general laws of the year eighteen hundred and seventy-three relating to the punishment of abortion."

Be it enacted by the Legislature of the State of Minnesota:

SECTION I. That chapter forty-nine (49) of the general laws of the year A. D. eighteen hundred and seventy-five (1875) be and the same hereby is repealed.

SECTION II. This act shall take effect and be in force from and after its passage: Provided that the provisions of this act

shall not apply to any offences committed before the act takes effect and as to all such offences the law in force at the time such offences were committed shall continue and be in force the same as if this act had not been passed.

Dr. McLaren: I second that motion in order to bring the matter before the Society. I am not entirely in favor of the motion, because I have not studied the matter enough. It seems to me that we are perhaps laying ourselves liable, if we repeal this special rule of evidence. It is possible that a woman might blackmail a physician very easily if this rule were taken away. If the ability to convict abortionists can be increased without running any extra risk ourselves, I would certainly be very much in favor of this measure. I would like to hear a full discussion of this matter. Perhaps it would be better to refer it to a committee for further information.

Dr. Millard: I hope the resolution will prevail. I think this is a question we had better not discuss too hastily. We all of us recognize the great crime of abortion and its frequency, especially in our larger cities. It is but a few weeks since I stated in the Ramsey County Medical Society that I believed there was but one way to lessen the frequency of this crime and that was to hang the parties who were guilty of it. I think my friend will remember an occurrence that happened in Canada where a party was sent to the penitentiary for life for the crime of abortion. It is painfully apparent to me and I think to the other members of the Society that we cannot convict certain parties in Ramsey County who are notorious abortionists. I do not know whether they have any abortions in the suburb up the river or not, but we have them here in St. Paul, and I sincerely hope that this Society will not stultify itself and vote this resolution down, but that on the contrary it will take decisive action to-day and refer this to a committee with authority to act upon it.

Dr. Andrews: I am heartily in sympathy with the remarks of Dr. Millard. I do not think we can make this matter any too strong. There is no greater evil existing in this State or other States than that of abortion, not only in actually committing it, but in the giving of information that leads to the commission of it.

Dr. Groves: It seems to me this is a matter in which we had better move slowly. I know of one case, not in this State but in a neighboring one, where a reputable physician would have been convicted on the unsubstantiated testimony of a woman who had conceived a spite against him, if they had had such a law on their statute books as this proposed one. Still, he was not

guilty, and I am happy to say he was not convicted, but is doing good work to-day. He is not a man given to that kind of work. Now, as my friend on the left has said, we should not act hastily in asking for the repeal of this rule of evidence without mature deliberation, giving this matter careful thought. If we do, we may be putting ourselves where we shall rue it, because it would certainly give parties, in case they so wished, a chance to blackmail or revenge themselves upon any physician towards whom they had a petty spite. There is no one that is more desirous of seeing a reform in this matter than I am. Cases are being constantly brought to my notice where parties have come to the Twin Cities and succeeded in getting the work done that they failed to procure in country towns. I think we had better go slowly and be very careful before we take any pronounced action.

Dr. TEFFT: It seems to me we had better give that committee a little discretion in the matter. As I understand it a woman can come up and swear an abortion upon a doctor, and her evidence will convict.

Dr. BEARD: I will move as an amendment to that resolution that a committee of five be appointed by the chair to consider the bill proposed, and make such changes therein to this rule of evidence as may be deemed expedient.

Motion seconded.

Dr. SWEENEY: I would suggest without making a motion that Dr. BEARD change his amendment so as to have that committee report at the business session to-morrow forenoon, so that we will have time to think this thing over.

Dr. BEARD: I will accept the suggestion and alter my amendment accordingly.

The amendment was then voted upon and carried.

The amended motion was then voted upon and carried.

President RITCHIE: I will appoint that committee at a very early hour. I am not prepared at this moment to do so. But after the adjournment of this present session the appointments will be made.

The President then read his address.

The annual report of the Treasurer was then submitted and adopted as follows:

R. J. HILL. Treasurer, in account with Minnesota State Medical Society.

		Dr.
To amount on hand June 17th, 1891		$349.74.
" " recevied during year for dues		786.00.
	Total	$1135.74.

	Cr.
By Am't paid for printing and stationery	$53.75.
" " for rent of hall	50.00.
" " " N. W. Lancet postage on Transactions	36.45.
" " " N. W. Lancet 440 copies of Transactions	360.00.
" " " C. B. Witherle, Sec'y, salary for 1891	100.00.
" " " Hitchcock and Maley, stenographers at State Meeting	40.00.
" " " Hattie M. Evans, reporter at State Meeting	15.00.
Total	$655.20.
Balance on hand	480.54.
	$1135.74.

Dr. MILLARD: I move that the the Secretary be instructed to appoint a committee of three to take into consideration the essential points of the President's address and act thereon.

Motion duly seconded and carried.

President RITCHIE: I will appoint as the committee of five upon Dr. DAVIS'S resolution, Drs. WILLIAM DAVIS, BEARD, TEFFT, JACKSON and CHILTON.

WEDNESDAY AFTERNOON.

The President called the incorporated Society to order at 2 P.M.

The Secretary moved that the newly incorporated Society now adjourn until Friday morning's business session.

Motion duly seconded and carried.

THURSDAY MORNING, JUNE 16, 1892.

The Society was called to order at 10 o'clock by President RITCHIE.

Secretary WITHERLE: I will appoint as committee to consider the special features of the President's address, Dr. MILLARD, of St. Paul, Dr. WELLS, of Minneapolis, and Dr. W. J. MAYO, of Rochester.

Dr. MILLARD: Under the head of miscellaneous business I beg to invite from this Society, on behalf of the American Medical Association, and particularly on behalf of the Journal of

that Society, a transcript of the proceedings of this Society. In the past the Minnesota State Medical Society has never been represented in the Journal of the American Medical Association. Many of the States in the Union have reports in the shape of a letter from the secretary of their association, and it is particularly desired by the officers of the American Medical Association that closer relations be established between the American Association and the State Society. In fact the By-laws have been changed somewhat this year with a view of closer relationship. I particularly desire a report from this State Society, and I extend this invitation to the Society.

Dr. FOSTER: I should like to say in addition to the remarks of Dr. MILLARD, that Dr. L. W. Bulkley, of New York, was here yesterday, and during the conversation spoke particularly of this same matter and requested me to make some remarks on the subject, and I should have done so if Dr. MILLARD had not. He said he hoped it would be brought up in some way before this Society and he hoped that either of the Medical Journals would hear from the Minnesota Society regularly more than they ever have in the past.

Secretary WITHERLE: As Secretary of the Society I should be very glad to comply with Dr. MILLARD's invitation, so far as I can, without any motion. I do not suppose that the intention is to send a detailed report of the meeting, but simply a general notice of the more important papers, and not particularly of the business transactions of the Society.

Dr. MILLARD: I believe it is customary for the Secretary to furnish that in the different states; Kentucky and Pennsylvania and New York have always done so. We would be very glad to have a succinct letter from Dr. WITHERLE concerning the proceedings of this Society. I also take pleasure in inviting Dr. JONES, who had a very able paper yesterday, to submit that paper in the columns of the Journal.

Dr. TALBOT JONES: I move that the Secretary of this Society be instructed to furnish a synopsis of the papers read before it to the Journal of the American Medical Association.

Motion seconded.

Secretary WITHERLE: Is the transcript of the business meeting included in your motion?

Dr. JONES: I think the scientific part of the work would be enough, that is all they care for. My idea is to make a synopsis of the scientific work.

Motion carried.

Dr. ANDREWS: Inasmuch as our Constitution and By-laws have been revised at this meeting, and inasmuch as a majority of

the members do not now understand our Constitution and By-laws as they stand revised, I would move that the Committee on Printing be instructed to have our Constitution and By-laws printed in pamphlet form and a copy sent to each member of the Society.

Motion seconded.

Secretary WITHERLE: I would like to move as an amendment to that motion that the new Constitution and By-laws be incorporated in the Transactions as has always been customary, that this printing of the Constitution and By-laws be embodied in the Transactions, as I think it is a more convenient form to have them in. It has always been done so.

Dr. ANDREWS: The Transactions when received are read by the members and are then laid aside. They are not as convenient as a little pamphlet would be.

Amendment seconded.

The motion as amended by Secretary WITHERLE was then carried, the amendment having been previously carried.

Dr. HILL: I would move that the name of Dr. ADOLPH ORTMAN, of Minneapolis, be taken from the active list and placed on the honorary list of the Society, and that his dues be remitted. Dr. ORTMAN is one of the oldest members of the Society. He has been incapacitated for several years for active work, and his financial condition is not such that he has been able to keep up his dues. I think it is wrong for the Society to drop such a man, a man who was prominent in the Society fifteen or twenty years ago; and I would like to see his name placed on the honorary list.

Motion seconded and carried.

Dr. BEARD: Mr. President, the Committee on New Members would like to ask for instruction upon one point which has arisen, and that is whether a candidate for membership in this Society, coming with the proper qualifications so far as legal standing is concerned, but who is registered as a graduate from the homœopathic department of a State University.

President RITCHIE: I would like to have the Doctor state whether he said it was this State or a State University.

Dr. BEARD: A State University, the Iowa State University.

Dr. TOMLINSON: It seems to me that if the code of ethics as recognized and promulgated by the Minnesota State Medical Association is good, we have nothing to do about it. We cannot express an opinion one way or the other, that is if the State Society is in affiliation with the American Association and accepts the code of ethics of the American Association.

Dr. MILLARD: This Association is in affiliation with the

American Medical Association and is classified by the Secretary of that Association as being in such affiliation. I would further state that at the recent meeting of the American Medical Association, at which there was the largest attendance in its history, a committee of five was appointed to revise the code of ethics of the American Association. That committee was unanimously instructed, or rather requested, to formulate a code of ethics more in accord with liberal medicine as practised at the present day. I think that Dr. BEARD's question can be answered in a word. In the past we have been compelled to recognize the diploma; in future we hope to recognize the man. If a man made a mistake in his career forty years ago and as he becomes more mature chooses to mend the error of his ways there is no reason in my mind why he should not be made a member of this Society or any other scientific Society. I hope this matter will not be hurried this morning.

Dr. TOMLINSON: I do not think that any man who is a member of this Society has the slightest objection to affiliation with any other medical man provided the latter does not give himself some special designation. But if a man presents himself as belonging to some special school of medical practice and he uses that designation not only in the Register but also on his sign, it seems to me he is always open to the accusation that he wants to enter the State Medical Society in order to use it as another means of advertising himself. I do not care how the gentleman has registered himself if he has simply put out his sign as Dr. So-and-so without any other designation. But if he announces himself on his sign to be a homœopathic practitioner of medicine, I don't think he has any claim to be a member of the regular association.

President RITCHIE: It occurs to the chair that it would be well for some one to present a motion and then the members can speak to that motion.

Dr. BEARD: The gentleman who is a candidate for membership in the Societv is now present and has stated to me that the Official Register of the State is in error. He informs me that he was not previously aware of the fact that he was registered as a graduate of the homœopathic department of the Iowa State University; he says he is a regular graduate of the regular school in that University, and he is perfectly willing to await the action of the Society and to obtain from the University the proper credentials if we desire them. Dr. F. W. Weeks, of Welcome, Minnesota, is the candidate.

Dr. TOMLINSON: I move that the gentleman's name be balloted on and that he be accepted as a member of the State Society.

Dr. MILLARD: I second that motion.

Dr. ANDREWS: I move to amend in this way. Since he is entirely willing to furnish credentials from the Iowa State University that we allow him to do so before his name is balloted upon.

Amendment seconded.

Dr. GROVE: I would like to ask the doctor if he understands that he is to be balloted and if elected that he will be expected to furnish a proper record, or rather have the present record corrected.

Dr. TALBOT JONES: I think before we vote on this question that we had better invite this candidate to make some remarks concerning his future intentions. If he makes a public avowal here of his intentions to practise medicine in the regular way in the future we will be in a position to vote more intelligently upon his candidacy than we are at present.

President RITCHIE: If there is no objection, and the gentleman desires to make such a statement to the Society, we will be glad to hear him.

Dr. WEEKS: I will say, that although graduated in 1884 from the regular department of the Iowa State University, I have confined my attention to the drug business with a little office practice until the last year. Last fall I commenced regularly the practice of medicine in the country, practising the regular medicine, that I learned at the University, and that I have especially adhered to, and that I intend to adhere to in the future. (Applause).

Dr. FOSTER: I move that the Secretary be instructed to cast the ballot of this Society for Dr. Weeks.

President RITCHIE: There is a motion and amendment before the house.

Amendment withdrawn with consent of second.

President RITCHIE: The question is now upon the original motion.

Dr. TOMLINSON then restated his motion and upon vote of the Society it was declared carried.

President RITCHIE: Does the Committe on New Members recommend this gentleman for membership?

Dr. BEARD: It does.

Dr. FOSTER. I renew my motion that the Secretary be instructed to cast the ballot of this Society for Dr. Weeks.

Motion seconded. Carried.

The Secretary then cast the ballot, and Dr. Weeks was declared elected a member of the State Society.

Secretary WITHERLE: I propose the name of Dr. Alfred

Mueller as an honorary member, upon the payment of his dues to date. He is now, and has been for many years, a regular member of this Society. Dr. Mueller is now in Switzerland but formerly resided in New Ulm.

Motion seconded and carried.

Dr. BEARD: I would like to ask the Secretary to read for the information of the Committee on New Members and the Society in general, that revised article of the constitution with reference to new members. I understand the article as revised yesterday will not apply to the members that have been proposed for membership at this meeting.

Dr. TOMLINSON: I was one of the members who voted for that amendment. I would like to move a reconsideration of that vote, with a view of having provisions more expressly stated so that a case like the one we have had this morning may not again arise. That is, that there will be a definite description of the qualifications necessary to become a member of this Society.

The Secretary then read the original clause and also the amendment.

Dr. BEARD: I voted against the revision yesterday, and therefore am not competent to move its reconsideration at this time; but now that the article has been read I think the necessity for its reconsideration is apparent. It seems to me that it is desirable to have some more definite statement made, as Dr. TOMLINSON has indicated.

Dr. ANDREWS: In order to bring the matter before the house I move a reconsideration of the vote of yesterday.

Motion seconded and carried.

Dr. ANDREWS: I now move that it be changed to read that those physicians applying for membership in the State Society shall be recommended by the county society of the county from which they come, or in case of there being no society in the county, that they be recommended by the nearest county society.

Dr. TOMLINSON: It seems to be very difficult to arrive at a definite conclusion at this time, and I would move as an amendment that a committee of three or five be appointed to consider this matter at length, and report at our business session tomorrow morning.

Dr. ANDREWS: I accept the amendment and second the motion.

Dr. MILLARD: This is certainly a very important matter, not only to the profession in these two cities, but also to the members of the profession in the country. I think from my

experience as a practitioner that it will be well not to take precipitate action in the matter. Now, I move as a substitute, that this matter be referred back to the same committee that acted on it in the first place, and that they be instructed to report at the next annual session. I think this is the best way.

Motion seconded.

A vote was then taken and the motion was declared carried.

Dr. MILLARD: I desire to submit the following resolutions with a view of amending the articles of the constitution of the Society.

"Resolved that article IV be amended by adding

"The list of honorary members of this Society shall be confined to such persons as have distinguished themselves in the field of scientific medicine."

We now have 25 or more honorary members of this Society, and the experience of the various societies throughout the country has been very unpleasant, regarding these lists of honorary members. I think the time has come to limit the increase to such men as may be properly entitled to this honor by reason of their distinguished services or careful research, and I therefore offer this resolution as an amendement to the constitution to be acted on next year.

President RITCHIE: Under the rule it lies over one year.

THURSDAY MORNING, JUNE 17, 1892.

President RITCHIE called the Society to order at 11 A. M.

President RITCHIE: I will announce as members of the committee to be appointed by the motion of Dr. MILLARD in the Section of Medical Jurisprudence, Dr. MERRILL, of Stillwater, and Dr. TOMLINSON, of St. Peter, and for the attorneys on that committee I will appoint Thomas O'Brien, of St. Paul, John Atwater, of Minneapolis, and Chancellor Wood, of Duluth.

The next report is that of the Committee on Revision of the Constitution; is that committee ready to report?

Dr. HOLMES, for the Committee on Revision of the Constitution, reported that after careful consideration no change was thought expedient in the previous report.

Dr. MILLARD: I move the adoption of the report.

Motion seconded.

Dr. FOSTER: There is just one thing in connection with that, and that is that there should be added to that the further statement that where no such county society exists, the applicants for membership shall bring with them credentials from the nearest county society.

Dr. HOLMES: That point was duly considered and thought

to be impracticable. Some of these societies are a long distance apart. In some cases they are two or three hundred miles from each other, and the good effects of that provision would be lost in such case.

Dr. FOSTER: Then what credentials would the men bring with them if they do not bring such credentials as I have proposed? The provision as we present it would be a stimulus to the formation of more county societies.

Dr. FISHER: While the intention and endeavor to encourage the formation of county societies is highly commendable it is also highly impracticable. Some of us will have to go sixty miles or more to attend the meeting of such society.

The motion to adopt the report was then carried.

Dr. MILLARD: I move a reconsideration of the report of the committee so far as it appertains to the number of censors, making the number six instead of five. I do this in order to comply with the articles of incorporation. It is necessary to have our action legal to substitute the word six instead of five.

Motion seconded and carried.

Dr. MILLARD: I now move the number be made six instead of five.

Dr. JACKSON: I second the motion.

President RITCHIE: If there is no objection it will be considered in the previous motion.

Dr. MILLARD: I would include in that also the change in the terms of service, in order to comply with the articles of incorporation.

The PRESIDENT: The motion will be considered as covering the whole subject.

Motion carried.

Dr. DAVIS, for the Committee on Suppression of Abortion, reported that no action was considered expedient.

Dr. FOSTER: I move the adoption of that committee's report.

Motion seconded and carried.

Dr. YOUNG: I desire to call the attention of the Society to a somewhat remarkable oversight on its part. A charter member of this Society, one of its honored presidents, a gentlemen and skilful physician, one who is well known to every member present, died some three or four years ago, and the fact has never been taken cognizance of by any action of the Society. The committee on necrology have overlooked the matter and I bring it to their attention at this time. I refer to Dr. Lincoln of Wabasha.

President RITCHIE: The committee on necrology will please take that matter into consideration.

Dr. HILL: I move that we recognize the death of Dr. Lincoln, as a worthy member of this Society in good standing and an old pioneer physician belonging not only to his county society but to the State Society as well, a member of the American Medical Association, and I think also a member of the International Association. I move that at this time we make amends for our neglect of the past three or four years, and in some way recognize him as a worthy man, a man of merit and an old member of this Society. I would like to ask if any action has yet been taken in the matter.

President RITCHIE: There has been no action taken as yet.

Dr. SWEENEY: I move that the Committie on Necrology be instructed to go over the list of members and ascertain the names of all those who have borne office and whose memory is worthy of recognition, and adopt suitable resolutions separately in regard to each, the committee to report at our next meeting.

Dr. FOSTER: I second the motion.

Dr. YOUNG: I move that the Secretary be instructed to communicate with the members of the family of Dr. LINCOLN who are living in Wabasha and inform them that it was no intentional oversight on the part of the Society, but merely an error of theirs.

Dr. SWEENEY: With the permission of Dr. Young I will include his motion in mine. I will withdraw that portion of the motion which asks that the committee report at our next meeting and suggest instead that the report be read at this meeting, and that the Secretary be instructed to communicate with the families of the physicians whose deaths we have neglected to notice, informing them of the oversight and apologizing for the delay. I would also move in addition that the resolution be included in the transactions of this present year.

Dr. BELL: I think it is hardly a proper motion as it now stands. We certainly do not mean to exclude deceased members of this Society from this action simply because they had not held office. We cannot all hold office. Let us give every member of this Society recognition.

Dr. SWEENEY: I will accept the additional amendment.

The amended motion was then voted upon and carried.

Secretary WITHERLE: I would like to offer the following resolution: Resolved that the unincorporated society known as the Minnesota Medical Society be now dissolved.

Motion seconded.

President RITCHIE: It is necessary in order that the Society may be regularly incorporated that the old one be dissolved and a new one immediately called to order. You will remember it

adjourned on the first day of the session, and this is simply to perfect our organization and incorporation.

Motion carried.

Dr. BEARD: I would like to inquire the age of the Minnesota State Society which has just been dissolved.

President RITCHIE: This is the 24th session. I now declare the old Society dissolved and call to order the newly formed State Medical Society of Minnesota properly incorporated under the laws of the State of Minnesota.

Secretary WITHERLE: I now move that the incorporated Minnesota State Medical Society adopt the Constitution and By-laws of the now defunct and unincorporated State Society.

Motion seconded and carried.

Dr. MILLARD: I move you that in the records of the new Society the Secretary make the following endorsement; that the next session shall be the 25th annual session of the Minnesota State Medical Society instead of the first, which would make it it appear that we were a new society.

Motion seconded and carried.

President RITCHIE: The next order of business is the election and installation of officers.

Dr. SWEENEY: I wish to suggest as a candidate for president of the new Society a name which I think will recommend itself to the good judgment of every member; the name of a man who is interested in the Society, whose interest has been coeval with his appearance amongst us in the state and who has done as much as any other man in the Society to maintain the honor and dignity of the profession. I take pleasure in nominating Dr. A. W. ABBOTT of Minneapolis.

Dr. MAYO: I rise to second the nomination of Dr. ABBOTT. He is an old soldier and an old physician among us and a regular attendant year in and out at these sessions. He has always contributed something of value to its meetings and has been an able and interested member of this association. I second his nomination.

Dr. MCLAREN: I move that the Secretary be instructed to cast the unanimous ballot of the Society for Dr. ABBOTT, of Minneapolis, as president of this Society.

Motion seconded and carried. The secretary then cast the ballot of the Society for Dr. ABBOTT and he was declared duly elected.

Dr. JONES: I move that a committee be appointed to conduct Dr. ABBOTT to the chair and introduce him to the old President. (Applause).

Motion carried.

President RITCHIE: I will appoint Drs. GROVES and JONES as a committee to bring him here.

Dr. ABBOTT was then conducted to the chair and introduced to the Society.

The remaining officers of the Society were then duly elected, in all cases unanimously. Their names appear on page 2 of this volume.

Dr. MCLAREN, for the Committee on Nomination of Chairmen, reported the following names:

Practice of Medicine—TALBOT JONES, M. D.

Therapeutics and Materia Medica—S. M. STOCKER, M. D.

Nervous Diseases—A. SWEENEY, M. D.

Surgery—C. H. MAYO, M. D.

Pathology and Physiology—J. CLARK STEWART, M. D.

Medical Education, Jurisprudence and State Medicine—J. B. MCGAUGHEY, M. D.

Obstetrics and Diseases of Children—A. F. GROVES, M. D.

Gynæcology—S. W. RANSON, M. D.

On motion the report was adopted and the nominees elected.

The names of new members elected during the meeting will be found in the Roster at the back of this volume, printed in *italics*.

The following appointments have been made by the President since the meeting of the Society:

Executive Committee.

W. A. Hall, A. B. Cates, C. A. Chase,
C. E. Dutton, T. S. Roberts.

Committee on Finance.

H. H. Kimball, A. G. Aldrich, E. Y. Chilton,
F. A. Dodge, O. C. Tarbox.

Committee on Nominations.

W. S. Laton, E. D. Keyes, W. D. Flinn,
J. H. James, J. W. Chamberlin,
S. W. McEwan, Jas. McAuliffe

Committee on Necrology.

J. W. McDonald, Wm. Davis, N. S. Tefft,
Kee Wakefield, A. Young.

Committee on New Members.

J. H. Stuart, F. E. Bissell, A. Gillette,
A. F. Groves, J. W. B. Welcome.

Committee on Publication.

Ignatius Donnelly, Jr., W. B. Morley, H. J. O'Brien,
J. H. Stewart, C. B. Witherle.

Censors of Papers.

H. E. Holmes, D. S. Cummings, C. E. Lum.

PRESIDENT'S ADDRESS.

PARK RITCHIE, M. D.

Ladies and Gentlemen:

In choosing a topic for my address, I shall avail myself of the custom permitting the widest latitude, both in material and treatment.

I see about me a company of men and women, representing one of the broadest and most liberal of professions, banded together for the upbuilding of human life and happiness: whose motto is, "prove all things; hold fast that which is good."

We are physicians, and discard all "pathies and isms."

We tread no narrow pathway laid out with mathematical accuracy by bigoted theorists, but travel the broad highway of universal knowledge, and drink deep draughts at the well of experience, seizing any or all weapons with which to successfully combat the common enemy, disease.

"No pent up Utica contracts our powers,
The boundless continent is ours!"

To be the chief captain of such a goodly army, is the full measure of my earthly ambition!

The annual meetings of our Society are seasons of great refreshment. That they are conducive to mental and professional activity, none can deny.

Pope says:

"One science only will one genius fit,
So vast is art, so narrow human wit."

The science of modern medicine has grown to such vast proportions, the wit of one poor human being is utterly incapable to grasp it in its entirety. As we follow our inclination or opportunity in special lines of study, we become a guide to the stumbling feet of our colleagues, who choose another pathway. Here by personal contact and mutual instruction we may approximately round out to the fullness of the perfect medical man.

As a Society, I believe we are abreast with the times, and that our scientific work will compare favorably with that of older and more pretentious bodies, but we should aim for still higher excellence.

Much of our shortcoming is due to mismanagement in the acceptance of unworthy papers, crowding out for lack of time

those more meritorious. A paper without discussion, is like a "shadow without substance," and to hear it read by title is poor reward for many hours of toil expended in its preparation. The censorship recently established may partly obviate this evil, and is a single step in the right direction.

Very much depends upon the personality and activity of the chairmen of sections. They are too often selected with more regard for geographical location than for special fitness.

I have made an innovation upon former custom by appointing the nominating committee early, and placing their names in the printed transactions where they "may be seen of all men." I have further jogged their memories by writing each member a personal letter, so they can consider their duties and perform them with some thought and deliberation, and not in the customary hurried and slipshod manner. I would further suggest in the interest of good work, that chairmen instead of sending invitations broadcast should select individuals whose knowledge of the subject would insure papers worthy of our attention. This might seem to discriminate against new or young men, but would not debar worthy volunteer papers, and in the character of the contributions, would speedily demonstrate its superiority over the careless methods now prevailing.

Minnesota stands to-day in the van of medical progress. The recent practioners of medicine among us have passed through an ordeal which stamps them as thoroughly competent physicians. The passage of a wholesome medical practice act by our legislature, and its judicious enforcement by our State Medical Board, has been the means of bringing many low grade and short term colleges to a sense of their sinful condition, and the advancement of their standard of medical education to a plane in keeping with the spirit of the progressive age in which we live.

During the past five years nearly 400 candidates have appeared before our Board, about 30 per cent. being rejected for insufficient qualifications. A much larger number would doubtless have applied with a larger percentage of rejections, but for the six months clause rendering ineligible the graduates of short term schools. At the time of the passage of this act, these low grade colleges represented 75 per cent. of the entire number of the medical schools of the United States, and our law's disqualification first awoke them to the necessity of lengthening their terms, and perfecting their courses of in struction; at the same time setting a shining example for the law makers of other states to follow. After much opposition and fruitless attempts at compromise, by colleges which shall be nameless, so many have ad-

vanced their standards that not more than 25 per cent. remain low grade and short term schools.

The good results of the work of our Board are seen in the character and qualification of its licentiates. As we value that highest which is most difficult of attainment, our high standard and rigid examination has attracted the best men from the best colleges, while the incompetent and the charlatan have sought other fields.

The community is protected from ignorance by sharp examination, and from quackery by vigorous prosecution of those guilty of dishonorable or unprofessional conduct. The community needs protection from quackery, especially in the rural districts where the Board cannot act for want of funds. This can only be done by the coöperation of the local practitioners in their county societies, through their county prosecuting attorneys.

The human animal is prone to kick vigorously at discomfort or misfortune, but accepts his blessing without thought from whence they come, or considering that any obligation rests upon him in return. We are greatly indebted to the gentlemen composing the Medical Board for the efficient and praiseworthy manner in which they have executed this beneficent law, and I call upon you to recognize your obligations. They give their time and talent for a paltry sum, and you owe them your cordial and hearty support. If your employe renders good service, he is encouraged by your approbation to vigorous and continued effort.

The members of our Board have been abused by quacks and their attorneys, traduced and blackguarded by the daily press and neglected by their professional colleagues. The secretary is not a big policeman with a club, to keep Dr. A. off Dr. B.'s professional corns, nor can he successfully prosecute violations of the law without systematic and intelligent aid from local physicians.

An attempt will be made at the next session of our legislature to repeal or amend our present act, so that the professional "lame, halt and blind," and all manner of hornless cattle will be permitted to enter our ranks. It behooves us to prepare for the fray, and stand together against this threatened disaster.

The editorial writer who prates about the narrow prejudices of our profession, the absurdities of our ethics, the glorious freedom of the press and the right of ignorant or unscrupulous pretenders to advertise all manner of nostrums and impossible cures, is no fool. He never takes it for himself or family, and is only "out for the stuff." He should recognize the fact that we

are not mere tradesmen, offering our petty wares to the highest bidder, but are actuated by a worthy desire to keep unclean and dishonest men out of the ranks of an honorable profession, and that while he may by sophistical editorials create public sentiment adverse to our position, yet for every dollar thus diverted from our coffers, the ignorant and unwary are robbed of twenty.

James Russell Lowell says:

"The right to be a cussed fool
Belongs to every creature human;
'Tis common as a general rule
To every sinner born of woman."

This may be man's inalienable right, but to our patients we stand in the double relation of protector and educator.

Personally and by proxy see your legislators and explain to them that by the judicious operation of this law, a higher, better, more skilful class of men will take our places, as one by one we drop out of the ranks of a profession which in nobility and good deeds cannot be excelled on earth. On the contrary a step backwards is a lapse toward that condition of ignorance and superstition when the doctor was a root digger and snake charmer, and the surgeon was a barber. It degrades an honorable profession, by association at least in the minds of the thoughtless public, with the long-haired "Injun doctor," the clairvoyant "seventh son of a seventh son," or the old "steam doctor" who parboiled his patients and filled them up with slops and teas made from mysterious roots and yarbs, or from those berries of which it has been said, "the greater the number of sheep in the pasture, the larger the yield of fruit to the acre."

The abuses arising from the unrestricted use of so-called medical expert evidence as a means of convincing juries, are becoming so frequent that all fair minded men agree that some kind of legislation is needed to regulate this growing evil. In some monarchical countries the testimony of medical experts is taken upon hypothetical propositions, and that of an attending surgeon upon questions of fact. Our constitution, in criminal cases at least, requires that expert evidence shall be taken in open court, and further that witnesses shall be subject to cross-examination by the accused or his counsel. The skilful manipulation of evidence by the attorneys, coupled with the almost unconscious bias of the expert, in favor of the interests which give him employment, is responsible many times for perpetration of the grossest injustice.

I am advised that a bill will be presented to our next legisla-

ture, wherein due notice of intention having been given to interested parties, the judge will appoint the experts and fix the amount of their compensation,so that they may represent justice rather than the interest of any particular client, and be entirely independent in regard to compensation. "This is a consummation devoutly to be wished." I would suggest that a committee of three be appointed by this Society, to draft and present a bill embodying such reforms as it may deem best in the interest of justice and good government.

A petition has recently been presented to Congress by the American Medical Association, through a committee appointed for that purpose, to establish a department of public health and make its chief a cabinet officer. Its purpose would be to disseminate knowledge of the nature and means of prevention of various infectious diseases, and at the same time to give it police powers to enforce measures which in the opinion of scientists would ultimately enable it to wipe many of these diseases out of existence. "The Secretary of Public Health," with the power and dignity of the United States Government behind him, could accomplish sanitary reforms wholly beyond the reach of individual effort, and it is not extravagant to say that small pox, diphtheria, scarlatina, yellow fever and cholera would almost cease to exist in our country, and even tuberculosis be limited in a surprising manner.

"Is not this a spectacle for gods and men?" A body of representative men praying Congress that their means of subsistence may be legislated away! It certainly stamps our profession as philanthropists in the purest and fullest sense of the word.

At a recent meeting of the New York Academy of Medicine, the question of the infectious nature of tuberculosis was taken up and discussed in notable fashion. First, that eminent pathologist and bacteriologist, J. Mitchell Prudden, read a paper presenting in the most logical and convincing manner the evidence that the tubercle bacillus was the direct and essential factor in the causation of tubercular consumption; that the commonest source of infection was from the expectoration of persons suffering from pulmonary tuberculosis; that the dried sputum floating in the air was inhaled into the air passages, and finding suitable soil was propagated, producing disease and a new focus of infection; that without transplantation of the tubercle bacillus there could be no transmission of the disease, and that hereditary phthisis was a myth except so far as inherited weakness provided a suitable nidus for the reception and multiplication of the germs.

Prof. E. G. Janeway declared his belief in its infectious properties, and from his note-book cited a number of examples in

proof. With probably 16,000 phthisical persons constantly living in New York city, the difficulty of isolating diseased individuals was obvious. To avoid contact so far as possible with disease producing germs, he suggested that all cases of pulmonary tuberculosis should be reported to the health office of cities at least, and that inspectors be appointed whose duties and powers should be to give proper instructions, and see that they were rigidly enforced as in other infectious diseases; that printed rules be supplied, requiring the destruction of sputum, the cleanliness of person, clothing and beds, and that the sick and the well should not be permitted to occupy the same sleeping apartment; that in hotels cuspadors containing water should be placed in rooms, corridors and halls, and that they should not be permitted to let any room which had beds occupied by a phthisical person until it had been thoroughly fumigated and disinfected.

That high authority on children's diseases, Dr. A. Jacobi, spoke of the indifference of some physicians, as well as of the public, to many of the minor disorders of infants, such as a sore mouth, a nasal catarrh and eczema, or a diarrhœa. "Intestinal tuberculosis of infants almost always had a history of antecedent diarrhœa." Recognizing the fact that the poison comes from without, we should close as soon as possible these avenues of infection. Children should not have unboiled milk, and do mestics should be carefully inspected before coming in contact with them.

Dr. Andrew H. Smith, on the question of escape from such abundant scources of contagion, stated that it was conditional upon the soil as well as exposure; that members of phthisical families died, not so much from heredity direct, as from association and contact. The public hall, the police court, the village postoffice were mentioned as prolific disease breeders; nay, the very dollar bills, so neatly tucked away in our slim pocket-books, may be bristling with vicious bacilli, ready to prey upon our vitals, and rob the community of our invaluable services!

As a common source of infection, one cold blooded ascetic vigorously condemned what he was pleased to call "the pernicious habit of kissing between young women." It has always seemed to the writer, that this custom was an injudicious waste of a good thing, which if used in a proper manner was a source of great satisfaction to both the kisser and kissee!

Finally, the president, Prof. Alfred L. Loomis, referring to the sputum as the chief source of infection, said: "The people should be taught that all expectoration is nasty, that no gentleman would spit in public."

This is a sharp criticism upon the unsanitary habits of some of the foremost citizens of the great Northwest.

While this symposium does not contain much that is new, yet it is of great weight when we consider the men of world-wide reputation engaged therein, and the thorough and symmetrical manner in which the subject was presented and discussed.

As was sagely remarked by the President, Dr. Loomis, "the people should be educated, not frightened."

It is not necessary that the victim of phthisis should be shunned like the small pox patient, because the "contagium" is not nearly so virulent, but when we think of the multiplied millions of useful lives blotted out of existence by this awful destroyer, it does seem but *fair* to the well that some restraint should be placed upon those unfortunates who are walking magazines of death and destruction.

Finally, in assuming the duties of your presiding officer, let me warmly thank you for the compliment of an election. Whatever I may lack in fitness or capacity, I shall endeavor to atone for with zeal and industry, begging your indulgence, and hearty coöperation.

GYNÆCOLOGY.

C. A. STEWART, M. D., CHAIRMAN.

CHAIRMAN'S ADDRESS.

Members of the State Medical Society:

The section of gynæcology presents for your consideration a liberal amount of contributed material of exceptional excellence in character, and including a diversified range of subjects of deep interest to those who devote attention to this special department of medicine; their universal excellence, however, has caused much hesitation on my part in reference to my ability to precede them with an address possessing sufficient merit to claim a share of your consideration, and I fully believe I should not do so were it not that their high character entitles them to this especial notice on my part, and to an expression of my thanks for the valuable assistance the writers have given me in making this department interesting and valuable.

Having made this acknowledgment I desire to devote a few minutes' time to a brief consideration of some of the principles involved in one department of our special work.

It is a little more than a quarter of a century since the first efforts to give definite instruction in this branch of medicine were made; these efforts, in the light of our present knowledge, were crude and imperfect as beginnings ordinarily are, but they were based upon the investigation of Sims, begun shortly previous to this time, which gave the subject definite interest in the minds of the profession; these were the first notable efforts in the way of systematic research, and were followed by definite therapeutic measures which marked the first real success in treatment and gave the first promise of the brilliant results to be had in the future. I presume it is unnecessary to say that this success in treatment was the result of a resort to surgical measures, and it follows, as a matter of course, that the success attending the enlistment of surgery in aid of gynæcology, in his hands, resulted in its being continuously retained not only by him, but by his followers, for the general improvement of their work, and that every advancement in surgery should leave its imprint upon this collateral branch of medicine. The discoveries in antiseptic and aseptic sur-

gery have been accepted and applied in gynæcology, and more than this they have been fostered and encouraged by this branch until in many respects the younger specialty has fairly outstripped the elder in boldness, decision and originality; and today some of the finest surgical achievements recorded have been in the field of aseptic surgical gynæcology.

The excellent results achieved by these measures in restoring to health patients suffering from forms of disease otherwise incurable, have excited a very commendable amount of surgical enthusiasm in the profession, and the gratifying recoveries obtained by operation in the more severe conditions has led to the employment in milder cases of the same measures; and while in the many instances in which operations of a restorative nature are practised, the principle is commendable, there is another class where in addition to the danger to life incurred, an operation involves a certain degree of mutilation, in which I am convinced we better conserve the interests confided to our care when we withhold our hand until fully satisfied that nothing short of operation will give the patient the desired relief. I refer particularly to the various forms of disease of the uterine appendages, so-called, such as prolapse and fixation of the ovaries or tubes by inflammatory adhesions, salpingitis, hydro- and perhaps also pyosalpinx, in all which conditions removal of the affected organs has been advised and practised as a curative measure, at first cautiously and in aggravated conditions, essentially chronic in their character, and evidently incurable by any other means; and as the surgeon becomes more conversant with the operation, its dangers and the means of averting them, he would naturally incline to the opinion that these conditions generally end in an operation anyway, and that it would shorten and simplify the patient's illness to take radical measures early; and so less and less attention has been given to the details of other therapeutic measures, and the time for keeping a patient under observation has in many instances been shortened until it has been practically abolished, and operation has been urged as soon as the patient presents herself for advice and before trial of any other measure has been made.

Now the impropriety of so advising is apparent to those who have large experience in the treatment of these affections, for they know that by far the larger proportion get well under treatment, and of those who do not entirely recover, many improve to an extent that renders them practically well; that is they become able to attend to their ordinary duties without undue suffering, and undergo a very considerable amount of fatigue without showing evidence of having overtaxed their

strength or aggravated the local condition. It may take months of persistent treatment to secure improvement, and there may be difficulties and delays sufficient to tax one's skill and patience to the utmost, but by persistent effort we may be able to secure the desired improvement, and, if we do not, the patient will much more readily submit to the alternative.

I know of no means of ascertaining what can be done in any case except by trial, as in my experience the existing amount or character of the disease is no criterion as to what the results of treatment will be; some of the most serious conditions in appearance improve readily under treatment, while apparently mild cases may prove intractable in the extreme and grow worse instead of better; after making the trial, however, and becoming fully satisfied that the diseased condition is such as to render the affected organs incapable of performing their functions, and that there is no hope of such improvement as will admit of a resumption of functional activity in the future, and when the suffering from the condition is so great that the patient can neither exist in comfort nor be of use in the world, then I most heartily approve of operation; but before being fully satisfied that these organs are so diseased as to preclude any likelihood of recovery, it is as bad surgery to remove them as it would be to remove an arm or leg before every proper effort to save it has been made. I think if the subject should be generally regarded in the same light in which conservative surgeons look upon an amputation, that failure to save the limb is a reflection upon the skill of the surgeon, that his action in saving the life of the patient by subsequent amputation is not sufficient to counteract, that the sentiment would exert a beneficial influence upon this subject; for the same principles properly apply in the management of these diseases that apply in others, and the cardinal principle under all circumstances is to save everything that can be saved, and to sacrifice only what is beyond hope of recovery.

PROCIDENTIA.

ARCHIBALD McLAREN, M. D.

Mr. President, Ladies and Gentlemen of the Society:

This subject which I have taken for our consideration is probably the oldest recognized gynæcological disorder. I have made this selection because I find so much misapprehension regarding our ability to cure this disease, even among our best informed members. I shall have to confine my paper to the

treatment of procidentia, for a paper covering the whole subject would be far too long for this occasion.

The first, and by far the most important part of the treatment of this disease, is the prophylactic care of the patient, and this should begin immediately upon the completion of the third stage of labor; for if procidentia becomes once fastened upon our patient, there is no prospect of her becoming cured without some surgical interference. Laceration of the perineum is of the first importance, as well as tears well up on the vaginal walls. All tears of the mucous membrane of the vagina should be carefully looked for, and as carefully united with cat gut under antiseptic precautions. Many tears are today left ununited, predisposing the patient to procidentia, sometimes for fear of criticism by the physician; more often because the physician has no suitable suture material with him.

Patients of the laboring classes, who are not able to remain in bed as long as they should, or to regulate their work as they ought, are more apt to suffer early in life from procidentia. Rest in bed should be prescribed after every case of labor for at least two weeks, and for a longer period providing there has been any post-puerperal trouble.

Martin, in his new work on gynæcology, draws attention to the fact that although we have discovered that child-bed fever is not due to errors of diet, but to inoculation with septic germs, still we go on starving our puerperal patients just as we did twenty years ago, depriving the woman at this most important time of proper food. She has just undergone excruciating pain, has put forth tremendous muscular effort, has lost a large amount of blood, and besides must establish a fountain of nourishment for the child. If a woman ever needs food, she needs it after passing through the puerperal period. The withholding of proper nourishment at such a time, and keeping her on slops, will certainly weaken the uterine supports and make her liable to procidentia, as well as to other uterine troubles.

In the treatment of procidentia pessaries have been, and still are given a very prominent place by many authorities, but they are very unsatisfactory and soon produce ulceration from the constant pressure of the heavy retroverted uterus. According to my observation the best pessary is a wool tampon, which the patient is taught to introduce every morning just before rising. This tampon should be removed the same night and followed by an astringent vaginal douche. Any local treatment can only be palliative, and the only satisfactory treatment of procidentia is some surgical operation or some combination of operations. Many patients, however, on account of some organic disease,

or from old age, or from uncontrollable fear of surgery, cannot be operated upon. To such patients the wool tampon is a great comfort. Injections of hot water, 105° F., containing pyrogallic acid, are of much benefit. Tannin suppositories can also be used to much advantage; but in all cases not included in the above exceptions, surgical operations offer the only prospect of a radical cure.

In following the literature of the past few years, I have been surprised to see the almost universal acceptance by American surgeons of the German teaching upon this subject. The Americans are the leaders in this branch of surgery; they are the most ingenious of all nations, and their greater experience should make them, as I believe them to be, the best teachers. One reason for the German preëminence was their early recognition and acceptance of the principles of antisepsis, making possible methods which were not successful underthe old régime.

In considering the subject of procidentia, the Americans distinguish three degrees, first, second and third. Most, if not all of the Germans, make no such distinction.

The first degree of procidentia is produced when the cervix is dragged below the lower health line of Emmet, that is, a line variable in a slight degree in healthy women, where the traction on the broad ligament produces mechanical congestion of the uterus, through compression of the thin-walled veins, the elastic walled arteries not being affected.

In the second degree of procidentia the cervix reaches the vulva, presenting it at the ostium vaginæ.

The third degree of procidentia is reached when the uterus comes completely outside of the body.

In considering the treatment of procidentia by plastic vaginal surgery, I shall divide the subject into three degrees, or steps:

First, trachelorrhaphy; second, anterior colporrhaphy; third, perineo-posterior colporrhaphy. The necessity for the first step is not recognized by the majority of foreign surgeons. The fact that a laceration of the cervix can prevent the proper involution of the puerperal uterus is not recognized by them; therefore, they do not advise trachelorrhaphy as the first step in the treatment, as is almost universally done in this country.

Amputation of the cervix, however, is advised abroad, when the cervix is much hypertrophied or otherwise diseased. If, after the performance of trachelorrhaphy, or amputation, it seems bestfor any reason not to continue the etherization too long, the patient had best be put to bed to wait for another time forthe second and third steps; for the last two should be done at the same sitting to secure the best results.

The second step, or anterior colporrhaphy. In 1856, Dr. Marion Sims, assisted by Dr. Thomas Addis Emmet, both of New York, performed the first operation for procidentia, in which anterior colporrhaphy was added to the old Baker-Brown perineum. In this operation, Dr. Sims intended to remove a portion of the vesico-vaginal septum, forming an artificial vesico-vaginal fistula. This he intended to afterward close, and in this way contract the anterior vaginal wall enough to remove the large cystocele and prevent the prolapse of the anterior wall. Dr. Sims raised the mucous membrane of the anterior vaginal wall with a tenaculum and grasped the tissue to be removed with a long-bladed pair of forceps, the jawsof the forceps being made to run parellel with the long axis of the vagina. The tissue above the blade of the forceps was then removed, when he was surprised to find that the bladder had not been opened. The edges of the vaginal mucous membrane were then united with silver wire, and the patient was cured.

Dr. Sims and Dr. Emmet worked together in the Woman's Hospital for several years, and from their increased experience they changed their method of operation from time to time, until to day Dr. Emmet has developed the following plan of operation, which he describes in his new book, and which seems to me to give the greatest number of successful results. Dr. Emmet first denudes three spots of the vaginal mucous membrane, the centre spot being about three-fourths of an inch long by one-third of an inch wide, lying just in front of the cervix. The other two points lie one upon either side, a little behind the central denuned point, and are just half its size. These three points are united with one or two silver sutures, so shouldered that the side spots may each overlap its corresponding half of the larger central denuded spot. By this procedure a sling is made so that the pelvic fascia holds the cervix back in the fundus of the vagina. After the three points are united two crescentic folds of mucous membrane are formed, running down the anterior vaginal wall. The edges of these folds are then denuded and united, forming an ellipse with its long axis corresponding with the long axis of the vagina, the lower end of the ellipse terminating just under the neck of the bladder. By this operation, the anterior column of the vagina which strengthens the anterior vaginal wall is preserved in the undenuded mucous membrane lying between the denuded edges. The undenuded mucous membrane which is almost entirely shut in, gives no after trouble, as experience has often demonstrated.

There are various other operations of anterior colporrhaphy; for instance, Stoltz's, or the "purse-string" operation. I consider

this to be wrong in principle, because it shortens instead of lengthening the anterior vaginal wall, and predisposes to the formation of a subsequent cystocele. Martin's operation is much better. Here an elliptical surface on the anterior vaginal wall is entirely denuded and then united with a continuous, buried cat gut stitch, bringing the sides of the ellipse together. This operation gives good results, if the cat gut does not absorb too soon, but it would be much improved by the addition of the three points of Emmet, combined with a few supporting stitches of silk worm gut.

The third step, perineorrhaphy, or perineo-posterior colporrhaphy, should immediately follow the second, that there may be no undue pressure upon the anterior vaginal stitches. The only perfect results in this third step can be secured with some operation which restores the normal anatomical relationship of the perineum, and brings the posterior vaginal wall close up against the anterior vaginal wall. The old Baker-Brown and all similar operations, which united the labia together, accomplished nothing but the building up of an obstruction. The physiological purpose of the perineal body is the holding in place of the anterior wall of the rectum during the act of defecation. Now, if this restraining influence be lost through solution of the tendinous centre, or a lateral tear of the perineum, or by separation of the fascial attachment of the lower pelvic muscles, then the rectum is allowed to bulge forward into the vagina with each straining movement, and as a result there is a direct drag upon the uterus above through the posterior vaginal wall. That this is the most important feature in the production of procidentia, is proven by the fact that procidentia does not occur when the perineum is torn completely through. A valuable aid in the exact location of the edgesof the torn fascia or muscular fibre is Dr. A. W. Abbott's suggestion regarding the voluntary contraction of the pelvic muscles. Unfortunately, a considerable number of women cannot contract the perineal muscles at will.

In regard to the selection of a perineal operation, I do not believe in the popular flap-splitting operation, because it can never restore the anatomical relationship of the perineum, and because it builds up, sometimes as high as the meatus, a false obstruction of redundant mucous membrane (which has been separated from the posterior vaginal wall). Then again, if the posterior side cuts are made at all deep, they must divide the bulbo-cavernosus muscles.

The Héger operation for posterior colporrhaphy consists in the denudation of a triangular surface, the apex of the

situated high up on the posterior vaginal wall, the base of the triangle corresponding to the skin edge of the perineum; the sides of the triangle are united with interrupted sutures, the base of the denudation being closed with sutures which correspond with the stitches which are usually employed to close an ordinary perineal operation. I believe this to be a good operation, although not as good as the Emmet operation; for the observation of Edward Reynolds, in the Boston Lying-In Hospital,* proves that Emmet's theories are correct, namely, that central tears of the perineum are very rare, and usually extend through into the rectum; that the great majority of perineal tears are transverse or crescentic in shape. The operation, therefore, for restoration of the perineum must follow the lines of Emmet or of Martin, and extend up into the posterior vaginal sulci, providing we are to catch up the edges of the torn fascia and muscular planes.

Martin's posterior colporrhaphy seems to me to be a good operation; it is apparently an exaggeration of Dr. Emmet's new perineal operation. The horns of the crescentic denudation of Dr. Emmet are carried far up the posterior sulci by Martin, sometimes as high as the cervix. Martin closes his perineal denudation, like his anterior wall operation, with the continuous buried cat gut suture. Dr. Emmet's operation seems to me more universally adaptable, and to be founded upon better surgical anatomy than any other perineal operation. I will not attempt to describe this operation to you to-day; an intelligent description would be impossible without charts, and a tedious explanation. I trust, however, that in studying up for this operation, you will not fall into the error of consulting Munde's "Minor Gynæcology," or Thomas's new work on gynæcology, which was revised by Munde. In these two books the same plates were used to describe Dr. Emmet's operation. I remember several years ago assisting a surgeon who performed what he called Dr. Emmet's new perineal operation, following Munde's description. When the stitches were tightened, much to the sur geon's surprise, the perineum turned wrong side out, and so it will always do when the stitches are placed as Munde's diagram represents. It is too bad that such a fine work as Dr. Thomas' and Munde's book should be marred by such an error, especially when it reflects discredit upon New York's greatest plastic gynæcological surgeon.

I am sure that I can demonstrate in the operating room the ability of this operation to perfectly close the perineum and

*Transactions of the American Gynæcological Society of 1891.

sufficiently contract the posterior vaginal wall at the same time. Munde says that this operation does not close the perineum; that it simply contracts the posterior vaginal wall. Emmet's is the only perineal operation which recognizes the anatomical fact that in a longitudinal section of the female perineum, with the patient lying upon the back, the highest point is the line of the hymen. Any operation which does not recognize this anatomical fact, cannot accurately bring together the divided muscles and fascia, and cannot prevent the woman urinating into the vagina, when she attempts to do so while lying upon her back.

I have operated for procidentia some twenty-five times in the past six years, curing all but four of my patients. One patient, during the absence of the nurse on the third day, got out of bed, walked across the room to the slop-jar, sat down upon it and strained until she had a movement of the bowels, tearing open the perineal wound. She has refused further operative aid.

In the second failure, the anterior vaginal stitches of silk worm gut cut at the lowest angle of the wound, allowing a partial return of the cystocele. The second operation upon this patient, I am sure, will effect a cure.

The third failure was upon a patient who had suffered with the third degree of procidentia for many years. A small sized fibroid tumor in the fundus prevented proper involution of the uterus, and to cure her it was ultimately necessary to perform vaginal hysterectomy.

The fourth failure occurred in a patient who conceived two months after the operation.

Most of my patients I have been able to converse with or to examine long after the operation has been made, and I have been able to demonstrate that they remained anatomically as well as clinically cured. In the after care of patients following the three Emmet plastic operations, it is important to keep the patients in bed for a considerable length of time, according to the degree of procidentia.

I remember very distinctly the first patient I ever saw cured of a bad prolapse. She was a young woman about thirty, with almost complete procidentia of the third degree when she stood upon her feet. Dr. Emmet operated at the Woman's Hospital, performing trachelorrhaphy, anterior wall and perineal operations, all at one sitting. She was then put to bed, and not allowed to even raise upon her elbow for the space of seven weeks, but at the end of that time she was found to be entirely cured.

The sutures in the cervix and anterior wall should be left from four to six weeks, so that the new perineum should become quite strong before subjecting it to the tension of the speculum. I prefer silk worm gut for the sutures in the cervix and anterior wall, to be held in place by a perforated shot. They are easily and quickly fastened by this method and are very easy to remove, providing the shot be not too small. The ordinary shot used for cleft palate are usually too small. About No. 1 duck shot is large enough not to become buried under the mucous membrane of the vagina.

When the three operations already mentioned fail to cure a case of procidentia, there are a variety of other operative procedures which should be considered. Alexander's operation by raising the uterus, but more particularly because it throws the uterus into the position of anteversion, is a decided aid to plastic vaginal operations. Alexander's operation alone would be sure to fail if applied to a bad case of procidentia.

A number of prominent surgeons advocate opening the abdomen and suturing the fundus to the anterior abdominal wall. Olshausen, Leopold, Sänger, Polk, Thomas and H. Kelly, all have at different times advocated this procedure. It seems to me to be a faulty operation, first, in that it raises the uterus above the health line already mentioned, acting like a pessary which is too large so that even though the union does not separate, which is more than likely, the patient is often not relieved of her discomfort. My experience, however, is derived from the patients operated upon for displacements of the uterus combined with adherent and diseased appendages. I have never performed the above operation simply for procidentia alone. Another objection to this operation is the element of danger, for there certainly is a certain percentage of danger, perhaps very low, probably not more than two per cent.; but even that percentage is too high for a non-fatal malady, and should only be incurred under exceptional circumstances.

Krug, of New York, sutures the fundus to the anterior abdominal wall, without opening the cavity. He places his patient in Trendelenberg's position, so that the intestines may gravitate out of the field of operation, and passes the suture with a long-handled needle. Whether this method is a gain as far as the danger to the patient goes, remains to be seen. I think I should prefer to open the cavity and see where my needle was going.

The Le Forte operation of the French, or the Neugebauer of the Germans, consists in producing a partial stenosis of the vagina. Two equal quadrilateral surfaces, one well back on the anterior vaginal wall, and a corresponding surface on the pos

terior vaginal wall are entirely denuded, and the two surfaces are then united to each other with cat gut sutures. This operation does not prevent coition. Several cases are reported where the patient has conceived after undergoing this operation, the artificial septum being, of course, divided at the time of delivery.

In an incurable case of procidentia, and one where the Emmet operations have failed to cure, I should be in favor of giving this procedure a trial before resorting to the last operation, namely, vaginal hysterectomy. This latter operation should be reserved for cases where the uterus remains of so large a size that plastic surgery, combined with Alexander's operation, cannot effect a cure.

Procidentia is the cause of much suffering, even producing chronic invalidism, and when it occurs in a woman who is dependent upon her own efforts for support, requires great patience and perseverance on her part, and great ingenuity on the part of the surgeon. But even the worst cases are susceptible of a cure and should be given the benefit of surgery, and not be consigned to the life of a hopeless invalid.

THE QUESTION OF THE REMOVAL OF THE OVARIES AND TUBES FOR CHRONIC DISEASE.

W. J. Mayo, M. D.

Mr. Chairman and Fellows:

Current literatureof late has been filled with sneers at Battey's operation—normal ovariotomy for nervous phenomena—and much distrust is also expressed as to the frequent necessity for the operation of Tait—the removal of chronically inflamed uterine appendages. Unfortunately for the credit of the laparotomist the distinction between these entirely different procedures, from a pathological standpoint, is not clearly understood by the general practitioner, and much confusion has been the result. The necessity for operation to relieve gross pathological lesions, such as ovarian and other tumors involving the ovaries and tubes, as well as acute suppurative processes of these organs, and to check the growth of multinodular fibroids of the uterus has been too well established to admit of discussion; but the expediency of removal for ovaritis, salpingitis and pelvic peritonitis has been questioned, while normal ovariotomy for nervous diseases has been challenged by high authority.

Much of the unjust criticism heaped upon the head of the

operator has been due to the fact that the nervous symptoms frequently exhibited by the patient with actual structural disease of the appendages, and due to such disease, often have great apparent similarity to hysterical and other manifestations of a diseased nervous system with normal ovaries and tubes. For a fair discussion of this problem these two groups of cases must be separated, and we will first consider that limited number of cases in which the ovaries and tubes are either normal or too slightly diseased of themselves to require removal, but wherein nervous phenomena more or less associated with menstruation have demanded the sacrifice.

Normal ovariotomy then in legitimate cases must have for its central event and idea the production of the menopause. According to the statistics of Hegar, Lusk and others this result may be expected in 84 per cent. of the cases operated upon. Failure in this respect may be due to incomplete operation, since it has been shown by Johnstone that the controlling nerve center lies close to the uterine end of the tube.

J. Bland Sutton has pointed out that coincident disease in the uterus itself may often account for a bloody discharge, which is not a true menstruation. In particular this thorough pathologist combats the idea of the existence of a third ovary, and asserts its non-existence upon unimpeachable evidence.

This operation in the past has been done for the relief of a host of nervous affections, such as insanity, hystero-epilepsy, neurasthenia, dysmenorrhœa, etc., etc. The part played by diseases of the female generative organs in the etiology of insanity has undoubtedly been greatly over-estimated. In a recent careful paper by Dr. Sara Linton, read before the Olmsted County Medical Society, the results of her own observation in the Minnesota Hospital for the Insane at Rochester, are given, and also the information obtained by a large correspondence with others holding similar positions in insane hospitals. The conclusion drawn from this extensive investigation was "that serious disease of the genital apparatus was but little if any more frequent among female insane than among the same number of sane." Castration for the relief of insanity, hysteria, etc., etc., can only be justified on Malthusian principles, and mutilation of the mentally afflicted even for this purpose would not equal Carlyle's suggestion of spending three days in the year exterminating able bodied paupers.

Charcot with his enormous experience says that he does not know of a single instance where success has attended the operation when done for this purpose. For the relief of dysmenorrhœa, according to Champneys, it is usually a failure unless the

painful menstruation is caused by actual disease of the appendages, while Lusk in a recent paper before the American Gynæcological Association dismisses the subject by saying that normal ovariotomy for nervous affections is mal-practice. A few good results have been obtained by Munde, Boldt, Goodell and others in pure examples of hystero-epilepsy, and in a recent able paper by Dr. C. A. Wheaton on osteo-malacia, he has found a few recorded cases where removal of the ovaries had been of great benefit. To sum up it may be said that normal ovariotomy should be undertaken only after most careful consideration of all the facts and consultation with the neurologist.

THE REMOVAL OF THE OVARIES AND TUBES FOR DISEASE.

My time is too short to go into the pathology of the diseases of the ovaries and tubes, but I will refer you to the works of Tait, August Martin, Pozzi and Price, and especially to the late work of J. Bland Sutton. It may be said in passing that the class of cases referred to are those technically called oöphorosalpingitis and perimetrosalpingitis, almost always originating in an endometritis, the latter being due to a septic or gonorrhœal infection, or more rarely having a tubercular origin. This inflammation extends by means of the tubes to the pelvic peritoneum excepting in puerperal cases, in which class the lymphatics may play an important part as carriers of infection.

The removal of the appendages for chronic disease has been opposed by so-called conservative men, and to tell the truth in many instances the problem is a most perplexing one. In other words how much disease does it require to render operation necessary?

So good a pathologist as H. C. Coe says that with an ovary in the hand it is often difficult to tell whether it is functionally useless or not. How much more so then before the operation! Upon this point C. C. Lee remarked before the N. Y. Academy that "many men were better operators than diagnosticians," and it must be confessed that too often the objective signs of disease are small and the subjective symptoms of the patient great, and no improvement to the coincident neurasthenia follows operation.

In deciding for or against operation certain other factors must be considered, for instance, the station in life of the patient. Those in affluent circumstances with opportunity to devote much care to their condition would require operation relatively less frequently than the poor classes, other things being equal. Something, too, depends upon the individual

skill of the operator. The safety and certainty of Joseph Price in his results would in many cases render an operation legitimate that to an inexperienced operator would be unjustifiable.

The uncertainty of the ultimate results in a given case of oöphorosalpingitis does not depend, as a rule, so much upon the power to relieve the local trouble, as to whether the symptoms are due to the pelvic condition or not, and also whether such an impression has been made upon the nerve centres that cure is impossible under any circumstances. An accurate diagnosis then is of the utmost importance. Upon this question Wylie says that as he improves as a diagnostician he becomes less conservative and more successful, and this view is sustained by Tait, Price, August Martin and a host of others. On the contrary Reamey gives the results of 164 operations in a paper before the American Gynæcological Association at its last meeting, and intimates that upon the whole the results were disappointing; and like opinions are expressed in late papers by Lee and Lusk, of New York, and Ross, of Toronto. A careful investigation of this subject leads one to believe that the gravity of the operation has led many men to expect too much or to operate too late. It will be well to consider some of the objections in detail.

1st. Immediate mortality. As in competent hands this is not greater than from 2 per cent. fo 6 per cent., it would seem that in suitable cases the benefits would exceed the dangers. It is also urged that the operation itself if not fatal may leave the patient in worse condition, for instance with hernia, which has been estimated to follow in 10 per cent. of cases. Wylie long ago pointed out that the abdominal cavity in its coverings differed from a hernial sac only by the presence of muscle and tendon, and that accurate suture of these structures would prevent its occurrence. In my experience this has been true. We are indebted to Coe for his investigations into the subject of secondary adhesions of the omentum and intestines as a cause of bad results. Price believed that irrigation acts to prevent this, and Morris, of New York, attempts to cover denuded surfaces with a film of aristol. A second operation may be necessary for their liberation. Fæcal and urinary fistulæ may follow. Tait in his unrivalled experience has often met with this result, and states that as a rule they close spontaneously, and if not, methods of dealing with them have been successfully instituted. Many cases of fæcal fistula have been cured by means of Senn's bone plates, also by Abbé's method of lateral anastomosis by means of continuous sutures, and Dudley, of New York, and McLaren, of St. Paul, report cures by means of direct suture of

the bowel opening. Under any circumstances operative accidents are not confined to this branch of surgery, and will grow less with added experience and improved technique.

A second important objection is the sterilization of the woman. The ready answer is that in cases suitable for operation the disease has already done this. Certainly the operation should not be blamed for the lack of judgment of individual operators In the *American Journal of Obstetrics*, for October, 1891, Polk records 50 cases of conservative surgery as applied to the ovaries and tubes; it is to be hoped that this work will be continued. On the whole, however, the general experience has been that in operating for chronic pelvic disease it is better to remove both appendages, as it has been shown that a second operation too often becomes necessary should this not be done.

The third objection is that a woman becomes changed physically and mentally, that she develops mannish traits, loses her sexual desire and may go insane. As to the physical change in an adult woman, J. Bland Sutton says: "Until puberty the sexes are little separated in sexual characteristics, merely an anatomical difference. If castration be performed in either case sexual differentiation fails to thoroughly develop, and they retain their primitive features, but when once developed the effect in the female of the operation is to produce the menopause," and with this opinion all thinking men agree.

Much discussion as to the effect on the sexual appetite has been indulged in; as the pelvic pain in most instances has rendered coition unendurable before the operation, so it has been said to restore rather than to destroy. Reamey, Lee, August Martin and others have investigated this matter as fully as possible, but the results have been uncertain, depending much upon the previous condition and age of the patient. Reliable information upon this question has not been obtained in sufficient amount to draw conclusions from. It is probable that in removing painful appendages it will restore at least for a time, but it is equally certain that atrophy following the menopause will abate if not abolish sexual feeling as under normal conditions. In young married women Wylie states that this hyperæsthesia of the genitals often follows, and says that this may be prevented by leaving a small piece of the ovary in suitable cases. Upon this point Polk remarks that the younger the patient the less the chances of cure. It has been charged that such operation may cause insanity. It can be said that this fear is groundless. Baldy and also Leidy, of Philadelphia, have carefully investigated this matter and have compiled statistics which refute the idea entirely. Many cases queer at the

time of operation have afterwards become insane, but this simply proves that the operation failed to prevent not that it caused this result.

Lastly and fourth. It is said that a very large percentage of cases after the pelvis has been cleared of disease are no better and that a recovery from the immediate operation does not mean final cure. Upon this question Tait says that a year must elapse before failure to relieve is manifest, and patients apparently worse during the first twelve months have merely gone through the nervous phenomena often found at the change of life. Pilcher in an able editorial on the failure of the operation to relieve, in the *Annals of Surgery*, for March, 1892, remarks that perhaps the most frequent cause is the fact that the pelvic disease was not the cause of the symptoms. It must not be forgotten that the accompanying endometritis gives rise to much of the patient's discomfort, and that the removal of the diseased appendages does not at once cure this condition. Therefore treatment such as curetting, etc., may be subsequently required for relief.

Personally as I become better able to diagnosticate pelvic disease my results have been most satisfactory, and I believe that any competent observer who will investigate the results obtained by Martin and Hegar, of Germany, Pean, of France, Tait, of England, Price and others, of America, must be convinced that in the removal of disease involving the ovaries tubes and pelvic peritoneum lies the only cure for a large number of gynæcological patients whose sufferings we are otherwise almost powerless to relieve.

THE PRECISE DIAGNOSIS OF LESIONS IN OLD LACERATIONS OF THE PERINEUM WITH SUGGESTIONS AS TO TREATMENT.

A. W. Abbott, M. D.

That the perineum completes the outer layer of pelvic supports, that it perfects the valvular closure of the vaginal opening, that it performs an important function in copulation and conception, are sufficient reasons for its restoration after rupture.

The anatomical arrangement of the perineum is analogous to that of the diaphragm or the antraabdominal wall, leaving out the recti, in that the muscles are in duplicate with fixed lateral points of origin with a tendinous line for insertion common to both, each muscle thus opposing its fellow and making the me dian the line of the greatest motion.

By an accurate observation of the line of rupture in recent tears and by a method of examination in old ruptures to be explained later, it can be positively demonstrated that a laceration in the exact median line rarely if ever occurs, i. e., the laceration is either upon one side or the other, or involving both, the right being the injured side in more than 80 per cent. of all cases.

That these two points have been neglected in reparative procedures suggested by authorities seems to be shown by the fact that all operations are devised to affect both sides of the perineum alike, irrespective of the precise line of injury. The purpose seeming to be to close the vaginal opening and to "make a good solid perineal body," rather than to bring together the torn ends of muscles and fasciæ and so restore the natural contractile power and supporting strength of the parts. If the right external oblique muscle of the abdomen were torn would the surgeon think of denuding across the whole belly and sewing up the left with the right muscle into a "good solid body?" Is not this precisely what is done in the perineum? And why should it be good surgery in one case and not in the other? Perhaps the comparatively small area involved and the difficulty of ascertaining the exact site of the original tear may have contributed towards the present methods.

It cannot be disputed that Tait's flap-splitting and Emmett's later operations do produce good results in many cases, but it is equally true that these operations are not only not applicable to all cases alike, but they usually include the sound side and hence cause a needless amount of disturbance of healthy tissue, which does not add to the perfectness of the result but does add in some cases to the suffering of the patient and interferes with the natural relations and functions of the sound part.

When the sphincter ani is made to contract voluntarily, the entire levator ani as well as the perineal muscles proper contract at the same time, and can therefore at all times be influenced by the control of the sphincter ani.

To ascertain what muscle or muscles of the perineum are torn, place the patient in the dorsal position with the perineum exposed; if now the patient alternately contracts and relaxes the sphincter ani, all the other muscles involved contracting and relaxing, as before stated at the same instant, it will be immediately apparent by touching the normal positions of the various muscles, which ones contract throughout their full extent and are therefore intact, and as positively those that are torn, by the total or partial loss of contractile hardening at the point of rupture. Indeed the exact site of injury may often be made out by sight alone, the sound side drawing up, while the tis-

sues of the injured side are carried towards the uninjured side instead of counteracting the effect of the latter as they normally should. Having so ascertained the exact anatomical lesion, how may we best repair it?

We may here venture the opinion that there ought to be none of these old lacerations to repair. All tears beyond the mucosa should be immediately sutured. No woman is fairly treated who is left a moment longer than necessary after the delivery of the placenta with a wound in the vagina which involves muscle or fascia. Does the good surgeon in any other part of the body trust to nature to heal torn or cut muscle or fascia with resulting retraction, granulation, cicatrization and deformity? Who of our patients is so carelessly neglected as she who has travailed for the continuance of her race? Great advance has certainly been made in the last twenty years. We have not now the excuse that we cannot absolutely prohibit external infection. It is safe to repair all lacerations of the perineum before absorption of tissue and retraction have taken place and while therefore we can make a perfect coaptation. The ordinary method, however, of introducing sutures, however deep, from side to side of the external surface of the perineum is not adequate. The suture should always be placed so as to draw the torn ends and edges of the muscle and fascia together. If we except the transversus perinei, all the muscular fibres in the perineum and levator ani run in lines nearly parallel to the vertical axis of the vagina, the flat sides of the levator ani being turned toward the sides of the vaginæ while the sphincter vaginæ and compressor urethræ are suspended like double curtains in front. If therefore the laceration is deep in the side of the vagina so as to separate its connections with the levator ani, the sutures (hardened cat gut preferably) should be carried transversely across the tear beginning at the upper end of the wound. After sutures have been so placed as far forward as the anterior edge of the pubic portion of the levator ani, tranverse sutures, preferably of silver wire, should be placed in front, beginning in the mucous membrane and skin if necessary, and deep enough to include the torn ends of the deep as well as the superficial transversus perinei. In this manner the parts will be brought back to the exact position they were in before rupture, and the perineum, after healing, will have the strength and contractile power found in nulliparæ.

Unfortunately incompetent or careless management will, in many cases, and for years to come, have left nature like the sainted Martha to do "the best that she could," which best will be a complete separation of the parts in some cases, in others

partial rupture with retraction and loss of contractile power. Here we are beset with difficulties not found in the recent tear. The torn muscles and fascia have retracted and atrophied, the ends are out of their natural place and a more or less extensive cicatrix occupies the site of the injury. There may be no scar in the mucosa, as rupture of the deeper strictures may take place without a tear of the mucous membrane, or if one exists it may have retracted so much as to be of no service as a guide.

If now we adopt the method of examination before described, we may immediately and positively ascertain just what muscles are injured and approximately the extent of the injury. To explain more in detail: With the patient in the dorsal position ask her to contract and then relax the sphincter ani. I have never known but one patient to fail to do this understandingly with a very little explanation. Place a finger upon each side of the median line and just within the tuberosities of the ischium. If the left side contracts and the right does not we know at once that the right transversus perinei is torn. With the thumb in front and the forefinger in the vagina and to the side we inlike manner determine the condition of the sphincter vaginæ. Passing the finger just within the pubic arch and to the sides of the vagina, the firm rounded form of the pubic part of the levator ani is particularly noticeable if the contraction be good and the muscle whole. The contraction of the obturator and coccygeal parts of the levator ani can be also very distinctly made out.

In 80 per cent. of the moderate lacerations it will be found that the right transversus perinei with a few of the internal fibres of the sphincter vaginæ are alone affected.

To repair this injury make an incision one-half inch long over the affected muscle, i. e., just opposite the tuber ischii, cut through mucosa, perineal fascia and triangular ligament so as to include deep transversus perinei, and then with small, blunt scissors extend the incision beneath the mucosa so as to get into the separated ends of the torn muscle. The scar in the vagina, if any exists, may then be excised by two cuts of the scissors and no further denudation is needed. The condition now is merely that in the recent tear. The silver wire is now passed from side to side in the vagina so as to include the whole width of the freshened surface, and finally one suture is passed from one corner to the other of the external incision. This is much like Tait's flap-splitting operation except in the means of suturing, and in that one side only is operated upon unless both sides are torn, in which very rare case the incision may be carried across the median line as far as needed.

The same principles should be applied to a complete lac-

eration through the sphincter ani. Here however the torn ends of the sphincter ani must be exposed and the tear up the gut first su tured by continuous buried cat gut, which does not pass through the rectal mucosa. The sutures for the sphincter ani must be placed far enough outward to make sure of coapting the severed ends.

In regard to ruptures involving the levator ani there has much been written that is confusing and many operations performed with this lesion as a supposed basis, when in fact it did not really exist. Anatomical plates and descriptions are misleading. The coccygeal part cannot be torn during parturition, as it can be stretched only as much as the limited extension of the coccyx demands.

The obturator part passes entirely past the vagina and is attached to the very posterior line of the rectum, being loosely connected to the lateral vaginal borders. This part of the muscle is not subjected to enormous strain during the passage of the child.

If a rupture occurs through the vagina opposite this part of the levator ani it cannot tear the muscle, as there are no fibers which pass between the rectum and vagina. The most that can occur is a pushing off of the muscle from the vaginal and upper rectal border.

The pubic portion is the most interesting to the obstetrician and surgeon, as this is the part which bears the greatest strain, yet we believe, notwithstanding all that has been written, that it is seldom the seat of rupture, but that if torn none of the usual operations will reach the part likely to be injured.

The relation of the pubic part of the levator ani to the vagina and sphincter ani and the stress brought upon them by the passage of the child's head, may be illustrated by taking a firm, unyielding arch as the pubic. From its extremities suspend contractile cords, to the ends of which at its lower sides attach a rubber ring to represent the anal sphincter, the lower edge of the ring to be attached by an unyielding cord backward as the sphincter ani to the coccyx. Between the suspended cords and the arch place an elastic tube, representing the vagina, the anterior edge of which is attached to the top of the ring. If now a large, blunt body is forced through the tube representing the vagina, our illustration is complete. As the body is forced through the flexible tube the lateral cords (the pubic muscles) begin to stretch; as the pressure increases, the ring (the sphincter ani) will stretch. Force the pressure beyond the elasticity of the parts and the tube or the vagina will rupture; the ring may rupture or the cord on either side will break from the ring, in other

words, the pubic part of the levator ani will tear away from the sphincter ani.

Having looked anxiously for this lesion in all possible cases for over a year, I have only found one in which it could be demonstrated. If the fibres of this part of the levator ani passed between the vagina and rectum, as usually represented, this muscle would frequently be torn in extensive lacerations. In several dissections and in over a hundred examinations in virgins and nulliparæ I have not been able to discover the fibres of this muscle extending between the vagina and rectum, nor have I in a single instance found the slightest contractile hardening which could be traced to this muscle while the perineum was grasped by the thumb in the vagina and the forefinger in the rectum, and yet the firm fibres of the contracted muscle can always in such subjects be followed from the pubic arch to the lower side of the rectum. In the solitary instance in which I have observed the rupture of this muscle, the rectum and sphincter ani instead of being drawn normally towards the pubic arch were drawn a little upward and to the sound side. The patient had not the slightest power of contracting the outer third of the vagina. The repair of this laceration is a serious operation, as the incision must be deep enough to reach to the inner edge of the sphincter ani and as low as its posterior border in order to include the whole of the muscle. The sutures must be passed deeply and in an upward and outward direction from the outer side of the sphincter ani.

In brief the principles of this method of repairing a lacerated perineum are, first, to definitely locate the lesion; second, to confine the operation to the injured muscles and fasciæ only; third, to place the sutures just as would be done in like injuries in any other part of the body. The results have been certainly gratifying, the perineum not only being restored to its nulliparous form, but what is of more importance, the control is perfect.

Too much must not be expected of the repair of the perineum. It will not alone cure prolapse of the uterus. That is dependent on causes of which this is only one. Its benefits are especially seen in cystocele, rectocele and the gaping of the vaginal valvular opening.

I now use only silver wire, except where cat gut is required for buried sutures, and allow the patient to get out of bed to relieve nature. Under no conditions are the knees of the patient tied together. The operation may often be done without general anæsthesia, the injection of a few drops of a 4 per cent. solution of cocaine being usually sufficient.

DEEP VESICO-UTERO-VAGINAL FISTULA.

S. W. RANSON, M. D.

Urinary fistula is a theme on which medical men do not seem inclined to dwell. Hence the literature on this subject is rather meager. This apparent apathy is no doubt due to the unfavorable results in this field of surgery, fully fifty per cent. requiring more than one operation, while at least ten per cent. are incurable. In other cases where the fistula has been closed, incontinence of urine has followed, especially when standing or walking. The bladder may have been so contracted by disuse as to hold but an ounce or two, and the patient have to pass her urine every half hour. Cystitis, pyelitis, nephritis and peritonitis may followwith fatal results. The opening may be from the urethra, bladder or ureters, and may enter the vagina, rectum or intestine, or may have an external exit.

When a fistula penetrates the vesico-vaginal septum at and includes a portion of the anterior lip of the cervix, it is called superficial vesico-utero-vaginal fistula. When it involves the anterior lip and anterior vault of the vagina, it is called deep vesico-utero-vaginal fistula. To the consideration of this last variety I wish to call your attention at this time.

I was called Feb. 5, 1891, to see Mrs. A. C. in her eighth confinement. She was a small woman, 36 years of age. Her labors had all been normal except the sixth, which was manual. Had been in labor twelve hours under the care of a midwife before I was called. Two hours before I arrived the pains, which had been vigorous up to this time, ceased.

Digital examination revealed normal pelvic dimensions; os well dilated, bag of water ruptured, head and cervix resting on pubic arch; large, pendulous abdomen with anterior obliquity of uterus.

It was obvious that the cause of dystocia was the inability of the head to engage in the superior strait of the pelvis, each contraction only forcing the head and anterior portion of the cervix against some portion of the pelvic brim.

I placed her in the dorsal position, supported the abdomen with a broad bandage firmly applied, and gave the sulphate of quinine, brandy and milk.

A few feeble pains recurred at long intervals.

During these pains I endeavored with the fingers of one hand hooked in the os and the other hand applied to the abdomen to engage the head in the superior strait of the pelvis, but the contractions were so feeble that notwithstanding the correction of the obliquity, the vertex remained free, simply resting on the

brim of the pelvis. The woman's pulse was strong and regular, her countenance composed, and there was neither evidence of exhaustion nor great suffering. For ten hours I waited, momentarily expecting strong expulsive pains that would speedily terminate labor. Twice she slept, and when she awoke I thought now surely labor will begin again.

Becoming fully satisfied that I must interfere and deliver the child, I administered an anæsthetic and placed her in position for instrumental delivery. I inserted one blade of the forceps, but when applied to the head of the child the lock was within the vagina. I therefore withdrew the blade and performed podalic version, speedily and easily delivering the child. The third stage was likewise completed by introduction of the hand and delivery of the placenta. As soon as she had recovered from the anæsthetic and rested, a vaginal enema of bichloride of mercury, 1 to 6000, in warm sterilized water was given and repeated twice each day. After 36 to 40 hours urine began to dribble away by the vagina. I did not at this time make an examination, but continued antiseptic enemas hoping to promote granulation and closure of the fistula, but urine continued to flow, and notwithstanding great cleanliness on her part excoriation of the genitals and limbs occurred. On Nov. 12, 1891, nine months after delivery, having prepared my patient by rendering her urine antiseptic by administration of salicylic acid, healed all excoriations of the vagina and emptied the bowels the day previous, assisted by Drs. Van Cleve and Way I prepared to operate.

After anæsthesia, the patient was placed in Sims' position and the fistula exposed. It was oval in shape, situated in the median line of the vesico-vaginal septum, high up at the vault of the vagina, and its size was about three-quarters of an inch perpendicularly by one and a half inches transversely. The entire cervix except a portion of the posterior lip was destroyed, and the remaining stump was drawn forward towards the fistula.

The superior border of the fistula and extending high up in the pelvis was one dense mass of cicatricial tissue. The fundus of bladder and uterus was firmly adherent, and the stenosed os pointed directly into the fistula. Simon's operation was performed, which consists in denudation and suturing of the inferior border of the fistula to the posterior lip of the cervix. The operation was rendered more difficult by fixation of the parts and inability to prolapse them but slightly. Silver wire was used for sutures. The bladder was distended with sterilized water to test the sutures and wash out the blood. The vagina was irrigated with an antiseptic solution, and the wound dusted with iodoform. A sigmoid catheter was placed in the bladder,

on the distal end of which a rubber tube was placed, the free end of the tube being submerged in a bichloride of mercury solution contained in a basin between the limbs. Through this catheter and tube the urine constantly passed into the antiseptic solu tion. Once each day the catheter was removed, cleansed and replaced, and the bladder washed out with sterilized water. On the tenth day the stitches were removed, but the catheter was retained until the fourteenth day. The closure of the fistula was complete and by first intention; no leakage ever occurred.

Twenty days after the operation she menstruated through the bladder, and has continued to do so regularly ever since. The only unpleasant symptom that ever occurred was slight vesical irritation for a few days during the menstrual period. For a time she had to void her urine every two or three hours, her bladder having contracted to that extent. Gradually she was able to retain her urine for a longer period, until at the end of eight or ten weeks she was able to retain it during the whole night.

The change which this operation wrought in this woman was marvelous. From a condition of constantly dribbling urine, excoriated genitals and limbs, ever present urinous odor and great mental depression, she was transformed into a comfortable, cheerful woman. Another result of this operation was to render her sterile, which in this case was desirable. I hardly know which gave my patient the most pleasure, the closure of the fistula or the positive assurance that she would never again become pregnant. It is obvious that an operation that renders a woman sterile may be seriously objected to by those who from any cause may be childless. In such cases we may dissect the uterus free from the bladder, and after denudation unite the inferior and superior borders of the fistula.

The objections to this operation are: First, the danger of wounding if not entering the peritoneum; second, the superior margin being composed of cicatricial tissue, the chances of union would be very slight and the operation a failure. Again we might operate as Trendelenberg has done for high vesico-vaginal fistula. Place the patient in Trendelenberg's position, to cause the abdominal viscera to gravitate towards the thorax. Make a supra-pubic cystotomy and close the fistula from the vesical surface. The objections to this method are, first, the stitches would have to remain in the bladder and be a constant source of irritation, and a nucleus for the formation of calculi, or the supra-pubic incision would have to remain open nine or ten days until the stitches could be removed. Second, the adhesions would have to be broken up and the uterus dissected

free from the bladder if the woman is to become pregnant and carry a fœtus to full term, and when that was done the fistula could be closed from the vagina. Hence we may conclude that in deep vesico-utero-vaginal fistula with destruction of the anterior lip of the cervix, the operation of election is the union of the posterior lip to the inferior border of the fistula.

Supposing the size of the fistula or its irregular cicatricial borders renders successful closure by the methods suggested impossible, or suppose we have operated without results, or have only increased the size of the fistula by our operation, we have not yet reached the limit of our resources, but may perform transverse obliteration of the vagina, which should be done high up close to the inferior border of the fistula.

REMOVAL OF AN OVARIAN FIBROMA WEIGHING FOUR POUNDS.

J. W. ANDREWS, M. D.

About the first of July, 1891, Mrs. H., of Elgin, Minn., came to my office to consult me in reference to an enlarged abdomen.

She gave the following history: age 49; the mother of five children; youngest 18; had one miscarriage eight years ago; menstruation has always been regular.

In February, 1889, nearly two years and a half before consulting me, she discovered an enlargement in the right inguinal region. It was then about as large as a Florida orange. A few weeks after this she consulted a very skilful and competent physician, Dr. W. T. Adams, of Elgin, who diagnosed her case as a uterine fibroid. In the autumn of 1889, six months after the growth wasdiscovered, he began treating it with galvanic electricity. This was continued six months. Later in the history of her case she was treated by a spiritualist doctor who gave her "blood medicine."

The tumor grew very gradually for about six months after this, and then grew very rapidly. Six months previous to her first visit to my office the tumor grew very rapidly.

When she first consulted me, about July 1, 1891, I found a large globular tumor in the abdomen rising as high as the umbilicus. I could readily eliminate pregnancy, ascites and cancer, and thought that I could readily eliminate fibroid and fibro-cystic tumor of the uterus; for the patient had never had hemorrhage; and a stronger evidence than this I could determine by bimanual examination that the tumor was not connected

with the uterus. I found the uterus normal in position, but somewhat enlarged. It measured three inches. There had been but little pain during the whole growth of the tumor, and menstruation was in every way normal.

The patient looked fairly well nourished but was somewhat emaciated.

Palpation over the abdomen gave the feeling of a large, solid globular mass. I could not get fluctuation. I thought nothing strange of this, when I remembered that I had removed several ovarian cysts where the cyst was so tense that I could not elicit fluctuation even after I had opened into the abdomen. After eliciting the above history and making a physical examination,I diagnosed my case as one of ovarian cyst with thick walls.

I so informed my patient. I told her, too, that no treatment except surgical, that is removal of the tumor, would do her any good; this she concluded to have done. I suggested to her, however, that in a case of so much importance to her that before coming to a definite conclusion she had better allow me to call counsel and get their opinion. With her consent, there fore, I called Drs. Davis and Harrington, of Mankato, both known to this Society to be men of ability. Their diagnosis and recommendations agreed with mine in every particular. In the interval I gave the patient a careful preparatory treatment.

The day having arrived for the operation, I chose as my assistants Dr. W. T. Adams, the patient's family physician, Drs. Steel, Davis, Warner and Harrington, of Mankato. All these gentlemen made the usual preparation, aseptic and antiseptic, before going to the operating room. The operation was performed in Tourtellotte Hospital, an elegant and clean hospital in our city. All the usual aseptic and antiseptic preparations were made of the patient, of the operating room, and of the room of the patient occupied after the operation.

OPERATION.

I first made an incision about two inches long extending from a point about two inches above the pubes upward. The incision was rapidly made until the subperitoneal tissue was reached; but this tissue and the peritoneum were carefully divided between forceps on the grooved director. The omentum was found attached to the tumor and indeed to a great deal of the anterior part of its surface. There were no other adhesions. When the tumor was well exposed I plunged a small aspirating needle into it, even to or beyond its centre. The needle felt all the way as if I were pushing it into gristle, and the tumor proved to be a solid fibroid mass from the centre to

circumference. I readily determined that it was attached to the right side of the uterus, and that it had a short, thick pedicle.

The tumor being solid it now became necessary to enlarge the abdominal incision. This was done by extending it from the pubes to the umbilicus, which made the incision six and a quarter inches long. It was not a very easy matter to expel the tumor even through this opening, for it would not yield the least bit. The pedicle, which was very vascular, was secured by a doubled, interlocked, braided silk ligature. A ligature was thrown around the tumor end of the pedicle; it was now divided and the tumor was removed.

A large, flat, warm sponge was placed in the abdomen over the intestines. The subsequent steps were considerably delayed by the oozing of the blood from the pedicle, not from the cut surface but from the ligature wound through it; this was finally arrested by putting a single ligature around the whole mass; thus were left at and about the pedicle three large silk ligatures, to be dropped back into the abdomen; but no subsequent harm resulted from them.

The abdomen was well mopped out with small warm sponges and not flushed.

The abdominal wound was stitched from within outward, each thread carrying two needles. The peritoneum was included with the other tissues, and not stitched separately with cat gut as was my former practice.

In stitching the abdomen an accident occurred that taught me a lesson. A fold of omentum had insinuated itself into the loop of one of the abdominal ligatures, and had it not been for the timely discovery made by Dr. Warner, it would have been included in the abdominal wound.

The incision being now closed it was well dusted with iodoform and covered with a thick dressing of antiseptic lamb's wool, and the patient put comfortably into a bed which had been well warmed by hot water bottles.

No vomiting followed. The operation was completed at 12 M. At 2 P. M. the pulse was 100, temperature, 101°. At 5 P. M. the pulse was 96, temperature, 101½°.

When the patient was put to bed I gave her a hypodermic of ¼ grain morphia with 1-100 grain atropine. This was repeated at 5 P. M. on account of pain in the abdomen.

On the second day, July 22, I visited the patient at 8 A. M. and found the pulse 90 and the temperture 100°, and the bowels decidedly tympanitic. Patient had vomited once and was now nauseated. She was in some pain and now for the last time I

administered a hypodermic, the same as the preceding day. After this restlessness and pain were relieved by occasional doses of acetanalide, though she was not at any time given more than two doses in 24 hours.

For the first week I visited the patient thrice daily and kept a record of her pulse and temperature. Without lumbering up this report with that record, suffice it to say that the pulse stood at or aboxt 90 and the temperature at or a little below 100°. Two or three times it reached 101°.

On the third day after the operation she said that she was hungry. For nourishment she had a teaspoonful of good beef tea every hour when not asleep. This was continued for the first three days, when she was allowed two tablespoonfuls every two hours and was allowed a small piece of toast, which was relished and digested. After this (fourth day)solid food was gradually increased until the seventh day, when the patient took three fair meals. The nurse drew the urine the first four days; subsequently the patient voided it herself and without difficulty.

On the fourth day I ordered milk of magnesia given every four hours. The following day the bowels moved well.

On the morning of the eighth day I removed the stitches. The wound was healed beautifully and apparently without a drop of pus, but there was a little tenderness at the upper angle, and this proved to be a small stitch abscess. It kept the patient's temperature a little elevated and somewhat retarded her recovery.

The patient made a good recovery, however,and in about three weeks after the operation returned to her home.

Thinking that it might be of interest to some one I herewith append her daily pulse and temperature record.

	PULSE.	TEMPERATURE.
July 21, 2 P. M.	100	101°
" 5 P. M.	96	101½°
July 22, 3 A. M.	90	100°
" 2 P. M.	96	100°
" 8 P. M.	86	100¼°
July 23, 7 A. M.	84	99¾°
" 7 P. M.	90	98½°
July 24, 8 A. M.	84	100½°
" 7 P. M.	84	100½°
July 25, 7:30 A. M.	90	100½°
" 7:30 P. M.	90	99 3-5°
July 26, 9 A. M.	90	99°

July 26, 7:30 P. M.	92	100¼°
July 27, 8:30 A. M.	94	99¼°
" 7:30 P. M.	88	100°
July 28, 8:30 A. M.	100	99¼°
" 8:30 P. M.	90	99½°
July 29, 8 A. M.	100	99¾°
" 9 P. M.	100	99 3-5°
July 30, 8 A. M.	100	99 3-5°
" 7 P. M.	84	99 3-5°
July 31, 8 A. M.	90	99 3-5°
Aug. 1, 9 A. M.	88	100°
" 7 P. M.	96	101½°
Aug. 2, 10 A. M.	90	99½°
" 8 P. M.	90	99½°
Aug. 3, 8 A. M.	88	98½°
" 8 P. M.	96	101½°
Aug. 4, 10 A. M.	100	100½°
" 8 P. M.	100	101 3-5°
Aug. 5, 8 A. M.	88	98½°
" 8 P. M.	78	98½°
Aug. 6, 8 A. M.	72	98½°

One reason for reporting this case is because of the extreme rarity of solid ovarian tumors.

Gregg Smith says: "Of all tumors of the ovary probably not more than three per cent. are solid. Most of them are malignant; true myoma has been found; pure fibroma is almost unknown." Tait says that growths of the fibrous stroma of the ovary, so as to form a large abdominal tumor requiring removal, have not yet been described.

Gregg Smith adds, however, "that he has successfully removed a solid ovarian tumor as large as a child's head in which repeated examination by a competent histologist failed to show any other histological element than pure fibrous tissue."

Pain he says was the most prominent symptom in the case.

It was so infrequent that Skene merely makes mention of it in connection with cystomata. He says: "This rare form of ovarian tumor I have classed with cystomata. * * * It is rare and not of sufficient importance to demand a separate class for itself alone."

Dr. Wm. Goodell, of Philadelphia, says: "While fibrous tumors of the ovary are by no means numerous they are certainly not as rare as the literature of the subject would lead one to suppose." He says that under this head should be included many of the neoplasms that are alleged to be sarcomatous or myomatus.

Dr. T. Gaillard Thomas says: "Ovarian fibromata do not usually grow sufficiently large to require surgical interference." But in 1879 he removed one as large as a man's head.

DISCUSSION.

The following is discussion upon the paper read by Dr. W. J. MAYO entitled

THE QUESTION OF THE REMOVAL OF THE OVARIES AND TUBES FOR CHRONIC DISEASE.

Dr. RIGGS: I think that Dr. MAYO is to be congratulated for the exceedingly lucid and able paper that he has presented on this subject. I especially think he is to be congratulated because of his keen insight into the gynæcological relations of the subject. I think the science of medicine can truly be said to be progressive when we can overleap the boundaries that separate our special lines of work, and see the bearings and relations of our confrerès' labors. Now, as to the removal of the appendages for insanity or neurasthenia, I do not believe that the operation is advisable or permissible. I do not believe that treatment of the uterus or its appendages for the cure of insanity is ever admissible, if you bar a few exceptions, notably the puerperal state and conditions of disease of the ovaries and uterus where, as Savage says, you have hallucinations of the sense of smell. As far as neurasthenia is concerned, I cannot see upon what basis this operation should be advised, and there are plenty of instances where, after the operation has been performed, the neurasthenic condition has continued just as severe as it was before the surgical procedure.

For hystero-epilepsy with distinct crises, by which I mean the presence of both epilepsy and hysteria in the same patient, and for hystero-epilepsy with mixed crises, a pure hysteria with epileptiform symptoms, I regard the removal of the uterine appendages as futile. Certainly the removal of healthy ovaries for a hysterical condition is not only unjustifiable, but, in my judgment, little short of criminal. It is a curious fact that their removal has but little if any effect upon the sexual instincts of the patient, at least for a number of years. Unless, therefore, there should be positive disease of these structures themselves, such as would, in the opinion of a surgeon, warrant their removal, the operation for its psychic effect should be performed only in the rarest of instances, and then only after the most

mature deliberation and after all other therapeutic measures have failed.

Often after an operation for diseased ovaries or tubes the nervous symptoms due to the primary trouble fail to disappear. At first sight this is perplexing to the surgeon and is most disappointing to the patient and her friends. This condition is due, however, to the vicious habit which has been formed by the nervous system, whereby new centres causing nervous disturbance have been energized; they persist in their activity after the removal of the cause of disturbance.

I have asked the opinion of my neurological friends, Drs. B. Sachs and Landon Carter Gray, of New York City, upon this subject, and they reply as follows:

Dr. Sachs says: "My idea is that tubes and ovaries should be removed only if the disorder can be traced to the menstrual function, if the disorder is distinctly worst at the menstrual periods and not at other times, and if there is actual disease of the organs and if this disease of the organs antedates the onset of the epileptic and other symptoms."

Dr. Gray writes: "If the tubes and ovaries are causing local symptoms referable to the lower portion of the spinal cord, or if they are so diseased as to make their removal advisable, I should remove them. But I have seen many cases in which simple electrical treatment, preferably galvanism of the pelvic organs of the female have done quite as much for healthy or but slightly diseased tubes and ovaries as a surgical procedure has done, and I do not therefore think that healthy tubes or ovaries or slightly diseased ones should be removed except in very rare instances, where the psychical effect of an operation may be beneficial as a last resort. Not long ago I had a case come into my clinic that would have been ludicrous if it had not been sad. A woman came to me from a well known gynæcologist, who stated that he had removed both her ovaries several years be fore at the instance of a distinguished professor of general medicine, who had made a diagnosis of neurasthenia proceeding reflexly from the ovaries. These organs, however, were found at the operation to be perfectly healthy; nevertheless, for some three months after the operation she improved greatly, and her most distressing symptom, that of constant vomiting, ceased entirely. At the end of three months all the old symptoms returned, and my gynæcological friend, thinking that perhaps something had been left undone, put her again under ether and opened the wound, when everything was found to be normal. After this second operation she again improved for a short time, but relapsed into her old symptoms and worried

the life out of my gynæcological friend, who finally sent her to me, nominally in the interest of science, but really to get rid of her. Upon careful examination I found that she had been a life-long hysteric, having had well marked hysterical convulsions throughout life, and local anæsthesia, and when I examined her she had great constriction concentrically of the visual field. She stated to me that she could eat nothing; but as she was chubby and well fed, I took the statement with a very large grain of salt. I directed one of my assistants to quietly follow her home, and behold, when she got into Third Avenue, the first thing she did was to buy a pint of peanuts and go sauntering gaily up the street, strewing her pathway with peanut shells as she ate! So that my gynæcological and medical friends were both mistaken, and had operated upon a life-long hysteric for something that I have since readily cured. A little girl came to me the other day who had been for six months afflicted with a contant sobbing respiration that had alarmed her mother and physician, so that the latter sent her to me to inquire if I did not think ovariotomy advisable. I hypnotized the little thing and in fifteen minutes sent her out of my office as quiet as a lamb. Very nearly a week has now passed and the symptoms have not returned. I simply cite these two cases to illustrate the fact that a more precise knowledge of nervous diseases would do more to kill useless ovariotomies than statistics. I have never known the convulsions of epilepsy or hysteria to be cured by the removal of tubes or ovaries, and as to the effect of the removal of them upon a normal nervous system, I believe that it is absolutely nil, except so far as it unsexes a patient in a partial degree."

Dr. McLaren: The Society should be congratulated on this excellent paper of Dr. Mayo. It has gone into the subject of reremoving the appendages very thoroughly. In regard to the first class of cases where there is no disease but where the operation is performed for the relief of the nervous symptoms, my belief is that the great majority of the operations have been performed upon patients suffering simply from ovarian hyperæmia; that from various causes a chronic congestion of the ovary has been the cause of ovarian nerve pains, of hysterical seizures, and the removal of the ovaries, as Dr. Riggs has put it, has not relieved the nervous symptoms, has not cured the patient because of the already formed habit. One of our most distinguished pathologists in this country, Dr. Coe, says it is impossible at times to differentiate between a diseased ovary and a normal ovary. We have seen a great number of ovaries removed in the past few years in which there were a few simple retention cysts containing serum, occur

ring in the Graafian follicle, which have been called cystic ovaritis, and after the ovary had been removed the patient was no better. It is in such cases as these that conservative ovarian surgery finds its greatest field, and a great number of surgeons throughout the country are now operating upon such ovaries, resecting them, taking out a portion of the ovary and leaving the rest. I remember very distinctly a case of this kind, where the woman had suffered such intense pain that the surgeon had been misled, and opened the abdomen two years ago for the purpose of removing the ovary, and instead of finding extensive disease he simply found some little cysts, tapped these cysts and cured the woman. He told me a month ago that the woman had remained cured up to the present time. Only a few days ago I performed a resection upon a diseased ovary where there were a number of cysts in the margin of the ovary. I took these out and the woman has had no symptoms as yet of the return of the trouble. The operation was not done for this purpose, however, as she had on the other side a large hydrosalpinx. In regard to treatment of pyosalpinx or ovarian abscess, we have presented to us with each case a serious question. A certain percentage of these women probably carry such troubles for a number of years without doing them much harm. On the other hand a certain number of these patients are liable to die at any time without warning. For instance, the case of a patient in whom I made a diagnosis of pyosalpinx and advised operation, who went home to settle up her affairs intending to return for operation, and who, while preparing to take the train to come from Dakota died from a sudden rupture of the Fallopian tube. We must state to the woman that there is a certain amount of danger in the operation, although the rate of mortality is perhaps only two or three per cent. On the other hand we are going to subject a woman to a great deal more danger if we do not tell her of the danger of neglect and the necessity for an operation. Martin, speaking on the subject says, giving statistics of some three hundred cases treated in his own clinic, that half of the cases have not needed an operation and two have been cured. He does not advise laparotomy as a rule unless there is a pathological change which can be made out by bimanual examination, and this should be the rule of each one.

Dr. PHILLIPS: I wish to congratulate the chairman of this section and Dr. MAYO, on the conservative manner in which they have given us their ideas. I disagree with Dr. MAYO on one point. I think when we open a woman's abdomen, that according to Dr. Tait's statistics five and five-tenths per cent.

of the patients die. Now, gentlemen, admitting that the mortality is but five or six per cent., which is Tait's lowest percentage, admitting this to be the case, although the operators of this country are not to be compared, perhaps, with the experienced operators abroad, even then we are subjecting that woman to that which we cannot recall, nor can she recall it. Now, as has already been stated, before we go any further, I admit that pyosalpinx or effusion into the ovary, should be operated upon without any regard to results. I do not question that, but I am talking about this promiscuous removing of prolapsed ovaries, or inflamed ovaries, when, as the gentleman has already stated, we can care for most of those cases without this operation, if we treat them scientifically. Many women have been subjected to this operation and in consequence lie buried to-day in this country. I do not know what the mortality in those cases is, but I have watched them carefully and know the losses have been great. I know that death certificates have been made out for other things, for peritonitis, and various other diseases in place of the true cause of death. I know, too, that with the lowest statement as high as six per cent. that we are not justified in operating unless we have a grave disease before us. If we do operate, we are simply dallying with that which we cannot replace. In this country the mania for operating has run to such an extent, has gone so far, that we do not consider a person's life of very great importance if we can only perform the operation. The question with us too often is the opportunity for operation. Now, this is not the proper question, for the question that we should advance in conservative surgery is, can we cure this woman without an operation? can we help her without an operation? I think we should treat her, and treat her scientifically for all of an operation. I do not believe in operating on a poor woman at a mortality rate of six per cent. Schröder loses 12 per cent.; and what must be the mortality with some of the American surgeons, I will leave it for you to say. I protest against this removing of the ovaries. Another thing about it is this—it unsexes the woman. I saw Pope remove an ovary and put it back again before a clinic in New York City, saying that he would not ruin the woman for life. If a man of his reputation will put back an inflamed ovary, how much should we not learn from that. I wish to put myself on record as a non-laparotomist unless it is absolutely necessary, unless we have pyosalpinx or abscess.

Dr. W. W. Mayo: I will ask if it is a custom that is observed by laparotomists to remove ovaries where there is an uncertainty of diagnosis? It ought not to be. Is it not the custom

of laparotomists, after opening a woman's abdomen, which in it self is almost harmless, very few deaths arising from it, in fact not one per cent., is it not the custom—I am now speaking simply of opening the abdomen and finding the ovaries in a healthy condition—for laparotomists or ovariotomists, or whatever you may term them, to do up the wound and leave the woman alone and let her ovaries remain when they are not in a condition calling for removal? I say that surgeons do well to let these ovaries remain if they do up the wound aseptically, which will insure its getting well. Therefore, as a matter of diagnosis, I say it is the custom and is a proper thing to do, the entry of a woman's abdomen as a diagnostic measure.

Dr. PHILLIPS: I should hate to acknowledge that I ever studied gynæcology if I was obliged to open a woman's abdomen to make a diagnosis in all cases. Occasionally we are compelled to do it, but I think it is a dangerous precedent to establish, a murderous precedent, that of opening the abdomen as a rule in order to make our diagnosis. It is subjecting her to the probabilities of peritonitis, whether you take out the ovary or leave it in. I would like to get the statistics of one hundred such cases. I think they would be high.

Dr. MAYO: It is a custom with me, and those associated with me, where there is a seriously diseased condition of either a man or woman's abdomen, and the diagnosis cannot be made without, to open the abdomen very frequently. In cancerous degenerations or other derangements, we open them quite frequently, and have never had a death result from it. We examine the cavity to find out the true state of affairs. The doctor is apparently opposed to opening abdomens. He gives us the statistics of five per cent. in one case, 12 per cent. in another, Schröder, and I would like to know if the doctor can give us the estimates of the death rate of those people who are not operated upon in that way. I think the deaths would probably be 25 or 30 per cent., or even more than that, fully double that of the other operation. Probably one-half of the cases would be followed by death, to say nothing of the sufferings of these women until brought to death's door. I do not think if you go to work in a proper manner to ascertain what is the matter, and having found out, remove the disease, that you will have nearly the mortality that you get by letting them alone. Therefore, doctor, upon your own statement that we save probably 50 per cent. of our patients, to say the least, I think you must admit that our way is the only way to look at these matters.

Dr. PHILLIPS: I have no objection, as I said in the commencement of this discussion, to the operation in cases of

ovarian cysts, pyosalpinx and abscesses of the pelvis which endanger the life of the patient, but I do protest against these wholesale operations for inflamed ovaries. We can certainly make our diagnosis in many of these cases without opening the abdomen. Now, Tait, in footing the whole thing up, ovariotomy and all, makes his death rate 5.5 per cent. and Schröder's death rate was 12 per cent. The question can be asked right here, what proportion were the ovariotomies, and what proportion were the other operations. We know that in removing ovaries many patients die. I have known of a number of patients, and you cannot dispute the fact.

Dr. TOMLINSON: When Dr. MAYO asked me to discuss his paper I expected to find a good deal to criticise. I am glad to be able to say that I do not find anything in his paper to criticise. I think that what he says probably represents the consensus of opinion on this subject, both of gynæcologists and neurologists. It may be interesting however to consider some of the conditions present in these cases from the standpoint of the neurologist. In the first place, let us consider the relation of disease of the nervous system and the conditions of the sexual apparatus to each other, and their relationship to defects of development. Now it is almost a truism in neurology that hysterics are born, that this so-called hysterical stigma is the result of a certain degree of irregular development. It may, however, be acquired in childhood by the influence of conditions bringing on convulsions in infancy, by the diseases of childhood, and sometimes by profound shock. Consequently at the first physiological epoch in the individual's life, we would naturally expect to find some effect from this hereditary or acquired imperfection of development, and knowing as we do the intimate association between the sexual organs in women and the nervous system, we would expect to find, as we commonly do, the manifestation of these conditions in the disturbance of the sexual function. I think, although I do not know from my own observation, having had an opportunity of making only a few post mortem examinations where such conditions were present, that probably in the majority of young girls who manifest hysterical disturbance, and who develop vague uterine and ovarian symptoms, which sometimes necessitate this operation of laparotomy, that it would be found that there is some defect in the development of the uterus or of the ovaries. Very often this defect is not recognized because of the fact that these ovaries are not removed and examined microscopically. There is a defect in the organization, which, acting in some way produces imperfect development of the functions and im-

perfect activity. As the result of this there would be more or less disturbance in the whole organization. These people are generally of that character who make a disturbance in the domestic circle and in their social surroundings, who are generally imperious in their demands for the gratification of their peculiar appetites and desires, and are liable to have morbid tendencies in one direction or another. A great many of them begin to masturbate almost at the time of puberty, and sometimes before. All this indulgence in their vicious tastes and appetites adds to this hereditary trouble, so that when they reach adult life we have those individuals such as I tried to describe the other night in my paper on shock. Consequently when this individual, who very often, indeed, commonly goes unrecognized, marries, we have another cause of disturbance in pregnancy and maternity. This adds very materially to the shock to the organization, and we have resulting oftentimes a complete break down of the organism. We have the whole sexual apparatus in a condition to be affected by whatever bad conditions may be presented in the surroundings of the individual, and in this class of patients we have developed a possibility for all the ills which result from septic poisoning, because there is apt to be a tedious labor in such a case, on account of the defective development of the uterus. There are apt to be serious tears in the mucous lining of the uterus and vagina, and the profound prostration following tedious labor may lead to the breaking down of the secretions in the uterus or vagina. This infection may get better in a few days or it may proceed and set up some one of the different forms of tubular disease, or it may proceed to the ovaries and set up disease there, and exhaust itself in increased connective tissue formation, or go on to the formation of cysts. So although we have different conditions manifested at different times and under different circumstances, by a comparison, taking them in relation to each other, we can trace them all back to the same cause. And so, looking at it in this way we can understand why it is that operations in those cases afford no relief to nervous conditions. We should just as soon expect to put on a new arm on a man whose arm had been amputated, as to restore a normal condition in these cases, and the fault is not with the laparotomist or the gynæcologist. I do not believe that he does one-twentieth part of the harm that is laid at his door. In most of the cases he brings relief, and as the elder Dr. MAYO has said, a large percentage of the cases he does not operate upon, of which we often hear as dying suddenly, the death sometimes being attributed to heart failure or some-

thing of that kind. I have known two or three cases of that kind where the post mortem has shown a rupture of a pus tube or something of that kind. Now again there is a tendency among some gynæcologists who do not study these subjects carefully and do not appreciate the relativity of these conditions, one exerting an influence upon the other, to operate when it is not necessary, and this is simply due to the fact that they do not study it in this way. I happened to furnish some of the various statistics which Dr. MAYO refers to, and out of the five cases which I furnished there were three cases in which insanity was precipitated by the operation. The seeds of insanity were there before; there was an irregularity of development of the nervous organism, and in one case, a case which was made all the worse by the individual procuring three abortions inside of a year, all of them followed by more or less profound disturbance and pelvic inflammation, the woman's husband took her to an eminent gynæcologist who suggested that if the ovaries were removed she would probably get well. The operation was performed, and the result was to bring on a violent attack of acute mania which passed into dementia. I do not want to say that the operation did this at all, but I think the mistake was in hoping to relieve the insanity by an operation. The added shock precipitated, in that case, a state of affairs which would have come later on anyhow. In another case the ovaries were removed from a sterile woman who was sterile on account of a gonorrhœal infection received from her husband shortly after her marriage. Her condition continued for several years and became more and more hysterical, until she finally began to show signs of mental disturbance. The operation was advised, and was performed. It was apparently successful at first, but at the end of ten months an attack of acute mania supervened and developed into one of the most terrible cases I ever saw. The tendency to nymphomania following lapartomy for removal of the ovaries is sometimes very striking, but this was the most violent case I have ever seen. This case passed into dementia, and she is now in an asylum. I want to say a word in regard to epilepsy, because of its relation to these other conditions. Here, again, we have the uterine disease, producing epilepsy or epileptic attacks. But we have the association of the epilepsy and the association of the menstrual disturbance, and as a consequence during a menstrual attack the epileptic outbreak is much more apt to be excessive. There are several cases at St. Peter of this kind, and yet I do not think that anybody would think that a woman with this epilepsy could be cured by an operation. It

can be alleviated however by particular care of the patient during the menstrual periods. I just want to call your attention to these facts not because I wanted to criticise the paper, but because I wanted to try to make it plain why these operations so often fail, and why it is that these conditions are so difficult to remove, and so disappointing to the practitioner in attempting to secure good results from treatment.

The following is the discussion upon the paper read by Dr. A. W. ABBOTT, entitled:

THE PRECISE DIAGNOSIS OF OLD LACERATIONS OF THE PERINEUM, WITH SUGGESTIONS AS TO TREATMENT.

Dr. MCLAREN: Dr. ABBOTT'S suggestion in regard to the location of the tear in the perineal muscles and of the pelvic fascia is a very valuable one, and since Dr. ABBOTT mentioned the subject to me several months ago I have tried it in a number of cases. It has certainly been of great aid in locating the tear, exactly following the edge of the old wound, in all the cases in which I have been able to instruct the woman how to contract the perineal muscles. In a few of the cases in which I have tried this, perhaps from my not giving proper instructions the women were not able to contract the muscles either at all or sufficiently so that I could locate the tear. Dr. ABBOTT is right in that Dr. Emmet's operation is usually like all the other operations, a bilateral operation, and performed upon both sides. I have however seen Dr. Emmet operate upon only one side, only denuding up into one of the posterior vaginal sulci, and bringing the crest of the rectocele to the lowest caruncle upon that side of the vagina where the tear was evidently unilateral, bringing that up and so completely closing the perineum. I have operated in this way myself a few times with excellent results. Under such circumstances the operation, as I understand it, would correspond almost exactly with Dr. ABBOTT'S operation. The operation is a surgical procedure which should undoubtedly take a very high rank in works upon the perineum.

Dr. DUNSMOOR: I have watched this question which the doctor speaks of—without any conference with him, however, because he has not imparted to me his secret—and I have noticed that there are very few women who know anything about closing the sphincter vaginæ. They have to be told, as the docter suggested, to make use of the rectal sphincter. I have noticed again that many and many a time a patient is prepared for an operation for restoration of the perineum, when the

sphincter is not divided and when operation upon the vaginal wall is really all that we need. Where an operation is made by running incisions up each of the sulci and making sutures run ning transversely across, and following up by denuding in the centre, that there is quite as good looking and apparently as normal a hymen as was present before the woman received her injury, or possibly before she was married. But I think there is a great deal to be said about what is the trouble with the perineum besides this tearing. Very frequently the simply making a suture at one side, as described in Dr. ABBOTT's paper, or denuding or drawing the points together, is insufficient to produce what we expect to get. In the first place we expect a great deal more of the perineum than it exactly performs. Many a woman has so shallow a perineum as to be apparently as lax as those who have borne children and suffered laceration. Again there are those who have deep muscular development after they have borne several children, yet we find them suffering from the excessive stretching which has been the result of the labor, to such an extent that the result is like that of hernia of some other part, that is, the muscular power of the sphincter is gone. Now we find that we simply have to take out a section so as to narrow the vagina on each side. After all this is done, we may find we have not produced the result we have sought for because the muscle has been worn out by this overstretching and has lost its power of contraction. The point that the doctor made, saying that every woman could have an operation within one hour after this, I think is wrong, because many of us have seen women in such condition that any manipulation would be a very dangerous procedure, and I believe that such an operation can be easily deferred, if necessary. I remember that I used to restore the perineum frequently, twenty-four and thirty-six hours after the mother had been delivered. This occurred sometimes in my own experience, and sometimes when I was called by others. I simply mention that to show that there are cases in which one hour afterward is not the time to operate.

Dr. MCLAREN: What you mean to say is that the sooner it is made the better, but that it is not always possible to operate within an hour or so.

DR. DUNSMOOR: Yes, that is what I mean.

Dr. ABBOTT: I wish to say that I am much obliged to Dr. MCLAREN for correcting me about Tait's operation. I mentioned Tait's and Emmet's operations because I consider them the two best, the allusion to Emmet's operation being double in all cases, being a slip of the pen.

The following is the discussion upon the paper read by Dr. A. W. McLaren on

PROCIDENTIA.

Dr. Dunsmoor: I am very glad to have heard this paper; I think most of the points are very well taken and I will not find any fault with it to-night. I think that most people who resort to these operations for narrowing the vagina, either the ones that have been suggested or the last named, try to do too much. It does not take very much on each side of the vagina to make a vast difference. I think the value of the Alexander operation has been most grossly exaggerated. I do not know of any operation that I have watched the effect of and received so little satisfaction from. I agree with Dr. Phillips as to taking a good deal of time for consideration before making the operation which has been suggested, of stitching the fundus to the interior of the abdominal wall. I should certainly object to doing it in the dark, because it is an operation which adds a great deal to the mortality when you make a combined operation. When we make a combined operation for procidentia, there are so many different manipulations to be made, that it becomes no trifling matter. There is the preparation necessary for an opening of the abdomen, followed by the opening of the abdomen, and that followed by the operation described.

Dr. A. W. Abbott: As Dr. McLaren has kindly referred to my paper on the perineum I would like very briefly to speak upon one point to which he alludes. He finds a difficulty in getting patients to contract the vagina, I would say that I have not met with even among the ignorant women who come to the dispensary. I do not ask them to contract the vagina because they do not know what the vagina is, but I simply ask them to shut up the bowel, and of course as the other muscles contract with the sphincter ani, the vaginal contraction occurs at the same time. One other point: I was glad to hear Dr. McLaren's remarks upon retroversion as accompanying procidentia. There have been only two or three recorded cases of complete prolapse with the fundus forward. For this reason Alexander's operation has been so successfully added to the vaginal operation. But after all it must be said that, while Dr. Emmet's operation
[illegible]ubtedly the best of all, we have not yet got at the bot-
[illegible] whole matter. There are cases which on account
[illegible]ifficulties as yet unsurmounted, we are unable

Dr. WHETSTONE: I wish the author of the paper would give us his opinion in a case where the uterus is much enlarged from sub-involution or some other cause, as much as four and a half inches in depth, and tell us how soon he would let the patient get up and go about her duties after such an operation.

Dr. McLAREN: I will answer the question and close the discussion. Amputation of the cervix should be performed in every case where the uterus is in a condition of sub-involution, to stimulate it, or trachelorrhaphy to contract it. Very often the taking of a wedge-shaped piece out of the cervix, will allow the uterus to contract very decidedly. After the three plastic operations of Emmet, I am very much in favor of keeping the patient in bed six weeks, not even allowing her to get up on her elbow. The first case of complete cure of procidentia, was one in which Dr. Emmet operated upon the patient, performing three plastic operations. He put the patient to bed for seven weeks, not allowing her even to raise her head and the woman was cured. I have followed that same rule, not allowing them to get up for five or six weeks or more, according to the degree of the procidentia. When the uterus is clear outside, they ought to be kept in bed until the natural tone of the pelvic fascia and of the congested tissue of the pelvis, be recovered. This ought to be fully regained before allowing a strain upon the vagina again. I think that Dr. ABBOTT is correct in his statement that in a certain number of our patients we operate upon the perineum in a hit or miss method. I believe that the best operation is the Emmet operation, but perhaps experience will show that Dr. ABBOTT has found the true solution of the difficulty, and that we will be able to cure a certain number of patients in the future that we have never been able to cure before. I hope we will find this to be the fact.

MEDICAL EDUCATION, JURISPRUDENCE AND STATE MEDICINE.

B. J. MERRILL, M. D., CHAIRMAN.

CONCERNING LAWS GOVERNING MEDICAL EXPERT TESTIMONY IN COURTS OF JUSTICE.

"A doctor who knows nothing of law, and a lawyer who knows nothing of medicine, are deficient in essential requisites of their respective professions." D. P. Brown.

I have been led into the consideration of the above subject through much disgusted observation, as well as frequently taking part as one of the *dramatis personæ* in that low comedy, wild west horse play, so often enacted in *dignified* courts of justice, under the name of "medical expert testimony." Every time I have played my rôle, I have given myself a mental cudgeling and made a vow never to do so again; but human nature is frail and I find myself again undergoing the disgraceful rôle, a spectacle to gods and men, the former to shudder and the latter to laugh. You are all familiar with the scene; the court room presided over by the astute and impartial judge; the bright and intelligent jury of our peers, who do not read the papers and are not in the habit of forming a series of concepts or completing an act of judgment; the case on trial, a civil one, a case of personal injury with a fat compensation as a prize in the last act; or a criminal case with murder and high tragedy for a background; the murderer necessarily temporarily insane; the medical experts make their appearance early, and stay late, one to six on a side, according to the plethory of the pocketbooks of the contestants; the honorable and learned disciple of Æsculapius, respected in the hearts of the people next to the theologians, hired for ten to one hundred dollars per diem, according to his mercantile value, to sit in the witness box and mouth out technical terms and fine-spun theories, as will best suit the side by which he is owned for the day; the opposition lawyer, who has been sedulously crammed by his medical chief of staff, until, with the aid of a formidable display of textbooks, he considers himself a fit candidate for one of the Latin diplomas of the average American medical college, pro-

ceeds to demolish the fine-spun theories of our distinguished Æsculapius. The chances are ten to one, if Lycurgus has a fair knowledge of logic, and can handle in an artistic manner the middle of a logical proposition, he will play havoc with the premises and conclusions of Æsculapius' theory. Meanwhile the jury slumber or shift uneasily in their seats; the result is that our twelve peers who sit in judgment are muddled, they know just about as much in the end about the medical aspect of the case as does crafty Lycurgus who has so successfully juggled the middle.

It resolves itself into the plain fact, that there are two groups of doctors, hired by opposing contestants; these doctors equally learned and respected; one group claims that A. B. is hurt grievously and shall be a life-long sufferer; the other that A. B. is just as good a man as he ever was, that his infirmities are all a sham which the magnetic tough of gold will cause to disappear like the mists of the morning. Again, one group asserts that C. D. is mad as a March hare; that through certain occult influences and a mismanaged conjunction of the planets, he was taken with temporary insanity, and while in this mood he killed E. F. At the time of trial the temporary insanity has disappeared, but certain wild looks and disjointed speech, and other mental irregularities exhibited by C. D., following the murder, as well as the act itself, go to show that he was insane. The opposing group assert that temporary insanity is something of a fake, and assert as positively that C. D. is and was perfectly sane. Here Lycurgus can revel and toy with Æsculapius, provided he has mental calibre sufficient to juggle the middle in these abstruse psychological problems brought out by the worthy doctors.

The upshot of it all is that the medical evidence is very apt to be equalized, one counteracting the other, the resultant being zero.

As an illustration, I recall a typical scene in a civil suit: A. worked for a wealthy corporation; was slightly injured just above the ankle by a blow from the lever of a revolving capstan. Wealthy corporation secured a doctor for A., had him tenderly cared for, and the following season employed him in the same capacity as before the injury, that of piling lumber in the mill yard. A. worked and drew his wages during the working season; fall came; Lycurgus looked him up, and as a result of the conference, A. brought suit against W. C. for irreparable damage done to his person. W. C. employed five highly intelligent and learned experts, myself among the number, to examine A. and see what they would find. A. had two experts, and expert they were; they found an ununited fracture through

the neck of the astragalus. W. C.'s experts could not diagnose this fracture, but had their doubts about A.'s being able to walk about so handy and pile lumber, with such a fracture existing, though that he did walk within three weeks after the injury, a distance of two miles, and the next summer piled lumber, was well evidenced by his fellow-workmen. A., during the long evenings of winter, had kept pace with his thoughts by a peculiar sidewise and half rotary motion of his foot, and finally acquired the accomplishment of a clicking tendon.

What could our jury of peers do? The evidence of the experts was diametrically opposed. Lycurgus came to the rescue; instead of playing the middle, he played the foot. A. elevated his foot over the rail, assisted by philanthropic Lycurgus, and each doubting Thomas was allowed to feel the gliding tendon and hear the ominous click.

A. was poor; W. C. a bloated, bond-holding corporation; A. received a legal reward of fifteen hundred dollars.

Our present method of dealing with medical expert testimony is bad; it is condemned by many eminent jurists as well as by all thoughtful physicians. To better this state of affairs, must depend upon the medical profession; we are the ones that suffer most under present methods; the attorneys are content to let things go as they are. They make cat's paws of the doctors, and by dallying with them lengthen their cases with evidence that in the great majority of cases has little or no influence with the jury.

The necessity of medical expert testimony in certain criminal and civil suits is, I think, well established; its object and aim are good. The expert is supposed to be learned and skilful above the average doctor; he is supposed to be of untarnished integrity and honesty; his true part does not deal with the facts in the case, but is to draw correct inferences from a knowledge of certain facts which do not lie within the bounds of ordinary experience, when the question to be decided so far partakes of the character of an art or science as to require a course of previous habit or study in order to obtain a special and competent knowledge of its nature, thus supplying the peculiar experience which the jury, as ordinary men, are supposed to lack. He should enlighten and make clear to both judge and jury, the meaning of obscure and abstruse symptoms, showing their trend in the light of science; his knowledge should be given concisely and to the point; his answers short, specific and categoric, and in a perfectly unbiased manner; always, however exasperated, keep an even temper; he should be, not a witness for party, but for justice; he should confine himself to questions asked,

and not endeavor to volunteer information; a witness who endeavors to prove too much is dangerous. If the questions asked are not plain in their meaning, do not answer them. He should not attempt to answer a question to which he feels himself incompetent to give a definite answer; it is more graceful to confess ignorance than to be found ignorant after pretensions to knowledge; there is no discredit in confessing that the science of medicine is not as yet an exact science; that there are opposing theories as well as treatments. The witness who is cautious to speak as to what he actually knows, and who goes no further than his science plainly allows him, will do more for the proper ends of justice, and gain more personal respect from those with whom he is brought in contact, than will the charlatan who wishes to appear more learned than he is, and brings discredit and contempt upon himself as well as to our noble profession, to which, unfortunately, he belongs.

To give the evidence of medical experts its proper position and due value, we should have a law whereby experts are appointed by the court; they should receive compensation from a source that shall leave them perfectly free from all suspicion of bias through financial connection with the case on trial. Thus their testimony, however honest they would be under any circumstances, would be relieved of the natural tendency to trend in favor of the side by which they are employed.

To effect this purpose, I have had prepared an outline of a bill which I desire to present for the consideration of the Society, hoping that you will by resolution adopt it, and appoint a committee to see that proper pressure is brought to bear upon the legislature at its next session. A concerted and earnest effort in this direction cannot fail of being successful. We will thus continue to stand at the head of the states in this country, in the elevated standard of our medical legislation.

The bill I have had prepared is as follows:

A Bill to Provide for the Appointment and Payment of Experts.

Be it enacted by the Legislature of the State of Minnesota:

SECTION I. In all cases pending in the courts of this state, civil and criminal, before or at the time of the trial of said cases, the judge of said court, when it is made to appear to him that the appointment of experts upon medical, scientific or mechanical questions is desireable, may appoint such experts to examine into the subject matter in controversy, said experts so appointed to be selected in reference to their impartiality be-

tween the contending parties; the number of such experts in each case to be fixed by the court.

SEC. II. In all cases where experts are so appointed, the court is to fix their compensation, and in all criminal cases direct the payment of the same in the same manner as witnesses on the part of the state are paid; in all civil cases the amount so fixed and determined by the court shall be taxed as disbursements by the successful party.

SEC. III. The court may order such experts to examine into any medical, scientific or mechanical question, and after such examination to testify in court in reference thereto.

SEC. IV. The testimony of said experts so appointed by the court shall be prima facia evidence of the statements and conclusions, as to the questions in reference to which said testimony has been given.

SEC. V. The court may also fix and determine the amount to be allowed for such experts for and on account of any medical, scientific or mechanical examination, analysis or test which the court may deem advisable to have made, and direct the payment thereof, or permit the taxation thereof, as costs as hereinbefore provided.

CONCERNING LAWS GOVERNING THE EXAMINATION OF INSANE PERSONS IN PROBATE COURT.

B. J. MERRILL, M. D.

Legislation in regard to the insane in most states is crude and defective. This is in part due to the fact that insanity is a subject complex and intricate in its various aspects, a grave problem to the psychologist, as well as to the physician. It is a sad and terrible disease.

Methods of dealing with the insane have been wonderfully improved during the past fifty years, yet no one will deny that there is still room for further improvement. The very helplessness of an insane person, the want of credence given to his thought and speech when once declared insane, under the dealing of law with him is very one sided. It has led to gross abuse in the past, and instances are not wanting in recent times where the doubtful insane are not given a fair show both before and after commitment to an asylum.

An individual may be picked up by the police on the street; he has been acting and talking queerly; no one knows him; he

is taken before a judge of probate court, a jury of two respectable persons summoned, one or both physicians, he is examined, declared insane, placed in care of the sheriff, then conveyed to one of the state asylums. All this may take place within twenty-four hours.

A family may possess a member, who, through business care and worry, family discord, age or an inherent irregular mental equipment, exhibits gradually or suddenly a want of moral and intellectual equilibrium; phantasy runs riot and overshadows reason; filial ties are none too strong in this family; the mentally sick member is a care and expense, he becomes obnoxious; complaint is made to the judge of probate court; two respect able persons are summoned as a jury; one may be a boy with a diploma a month old from a medical school, the other an illiterate quack without a diploma; he is adjudged insane upon the evidence of interested relatives. Grant that the jury summoned in the above case be two intelligent and conscientious physicians, are they not placed at a disadvantage? They meet for the first time the suspect and must depend in great measure upon the symptoms outlined by designing and unsympathetic relatives; no means are provided for detention and observation of the suspect with a second examination at a reasonable time in the future. Is it not in either case a one-sided controversy? The suspect becomes the ward of the state and is committed to an asylum, over crowded, and not having proper department buildings in which to classify its inmates; the medical superintendent has a despotic power over his liberty; the public loses sight of him as well as interest in him; he is now considered a subject solely for the disposal of the medical profession.

With the present mania of state institutions to be run cheaply, to make a record for economy and a light per capita expense in the annual report, our mentally sick man comes under the immediate care of underpaid and incompetent attendants. However conscientious, intelligent and hard working the medical superintendent and his assistants may be, our so-called insane person must for many hours of the twenty-four be under the care of a non-scientific and untrained, and perhaps brutal attendant.

We seek for trained nurses in private practice, and to them, with their scientific nursing and intelligent carrying out of orders, oftentimes is due, more than to drugs, the speedy and full recovery of our patient. Why then should our state insane asylums be denied the services of trained nurses and attendants, and trained for such special service? We know that the mentally sick need intelligent and comprehensive nursing in greater measure than one bodily sick.

Our state ranks high in her medical laws and restrictions. The medical profession of our state, through the working of wise legislation, is becoming clean cut and intellectually above the mediocre man of ten years ago.

Our state institutions rank high for intelligent and honest conduct of their affairs. They may become famed in the land if we, as a profession, would interest ourselves in their further development in securing wise legislation, whereby the few of our fraternity who have made the object of their life-work the study and care of the insane, may be unhampered in their progress by ill-advised, crude and tentative laws.

Rather than spend our time in composing and listening to papers on hackneyed subjects, let us stir ourselves and secure enlightened legislation for the sad and helpless insane man, who from the time he becomes a suspect, has not even the same chance before the law as has the petty thief and house breaker. If the present status of this sad but interesting question were appreciated by the public, as well as the true position it should occupy, no citizen, sane or insane, would be exposed to the risks or the actual wrongs which confront them always, and from which they cannot always escape.

You will find that if you question the judges of probate courts in your respective counties, that they will confirm my opinion that our present method of examining and committing the insane is decidedly crude and defective. Some method should be devised whereby the suspect may be under personal observation for a time, and a second examination made. That more frequent visits be made to public and private asylums within our state, and that these visiting boards be made up largely of laymen. Also that a training school for skilled nurses be established at some one of our public asylums, where persons of good intelligence may be instructed by the medical staff for duty as skilled attendants upon the insane.

I would recommend that a committee be appointed to take counsel, legal and medical, and at our next meeting report a bill for our consideration, which, if satisfactory, we can bend our energies to get passed by the legislature.

DISCUSSION.

The following is the discussion on the paper read by Dr. B. J. MERRILL entitled

CONCERNING LAWS GOVERNING MEDICAL EXPERT TESTIMONY IN COURTS OF JUSTICE.

Dr. MILLARD: For one, I am delighted with the paper. I am glad to know that the doctor has anticipated me in regard to legislation looking to the regulation of medical expert testimony in Minnesota. I informed this Society night before last that I had drafted a bill myself with a view of having it referred to a committee to be appointed by the President of this Society, my object being its introduction and possible enactment at the forthcoming session of the legislature. In regard to the doctor's bill, incorporated in the paper, I have but one criticism to make. In some respects it is a better bill than the one I have drafted. The bill of Dr. MERRILL has been drafted by one of the ablest attorneys in the state, a man who was my personal attorney for a period of fifteen years. I find that in drafting the bill he has inadvertently overlooked one feature that would be incompatible with the constitution of this state; it is to the effect that in criminal cases the accused or his attorney at the proper time shall be permitted to cross-examine any person giving testimony appertaining to the case under trial. This is not specifically provided for in this bill, but it can be by changing a few words in the phraseology of one of the sections. Now, sir, as to the necessity of legislation in regard to medical expert testimony, I will not dwell upon it at this hour, for it is sufficiently evident to us all. It does not require any further discussion. It is absolutely necessary that there be some change in the methods of conducting the trials that occur, both in civil and criminal cases, where medical men are called upon to give testimony. I am speaking now as an expert, as you well know that testifying in these cases forms a part of my labors, and it is my attempt in the performance of this duty to the public, and to the plaintiff and defendant both for that matter, to be as exact as possible. I endeavor to make my testimony tangible, but this is not the rule, and particularly is this statement true with regard to expert testimony pertaining to surgery of the nervous system. It is a lamentable fact that as the result of the large number of trials for railway injuries of the spine in the last few years that these corporations have paid out the sum of thirty-five millions of dollars, the result of verdicts obtained in open court. It is a lamentable fact, also, that the

pathology upon which these injuries were based is absolutely contradictory, there being about as many authorities on one side as the other. In fact all we know is that there has something occurred in a certain proportion of these cases. I am not now speaking of the gross lesion that occurs at the time of injury, but of the remote effects. I demanded in my paper a year ago that there be a halt called in this direction. I think in this state and in the country at large that these trials are not as frequent as they have been in the past. Juries and the public are becoming educated, and appreciate the outrage that is being perpetrated upon corporations.

Speaking of the subject from a criminal standpoint, the situation is equally outrageous. In investigating the subject some years ago, one of the oldest prison men in this country, a man who has had experience in three of the largest states in the union, who has spent his life as a prison official, informed me that a vast majority of the murderers in the state prisons with which he has been connected had been defended for the crime committed on the ground of insanity. Said he: "Dr. MILLARD, I never in my life saw one of these people become insane after they were sent here to prison." Go over the hills to Stillwater prison, examine the records there for the last forty years and you will find that several hundred murderers have been committed within its walls. You will find that in a majority of the cases that have been sent there for murder the defense has been insanity. You will find that not in a single instance has a person become insane after having been committed to the care of the warden. Now what is the effect upon the great profession of law in this state? These lawyers have no trouble in going to members of the medical profession and securing their testimony to the effect that at the time of the murder the criminal was suffering from so-called temporary or transitory insanity. Now, gentlemen, I appeal to you, and I appeal particularly to the specialist not to disgrace us any further in this direction. It is time to cry halt. Looking upon the subject from a humanitarian standpoint, it is true we have a tender cord in our hearts for the victims of insanity, but I have no fears that we will err in this direction. Personally I am one of those who believe that when a murder is committed that it is a premeditated murder in over ninety per cent. of the cases.

Dr. TOMLINSON: I have been very much interested in what Dr. MILLARD has said, but I cannot agree with two or three points. There is one thing in particular that I wish to correct

him in, and that is he says there are no criminals who became insane after they got in prison. I know of my own personal knowledge that there are sixteen in the hospitals of St. Peter and Rochester who became insane after entering prison.

Dr. MILLARD: Were they murderers?

Dr. TOMLINSON: No, criminals.

Dr. MILLARD: I said murderers.

Dr. TOMLINSON: All those men were committed for assault. There is one thing I want to call your attention to, which does not seem to be understood by the public at large or by the profession either. The majority of those cases represent a varied degree of defective organization, and the criminal life they led is due to that organization. To begin with they probably inherited this defective organization, and after they grew up their evil habits exaggerated this downward tendency. They are convicted, in course of time, of criminality, and incarcerated in our prisons, when in reality they are insane. Too often the well developed, well organized criminal is acquitted of the crime for which he is perfectly responsible, and for which he ought to be hung, while the really insane man who is not responsible for his actions is looked upon as a criminal and treated as such.

Now with regard to this matter of experts. I am familiar with the way it is done in the East, and I am aware of the fact that there has been a very strong effort made to have the experts appointed by the court or by the governor or by the general government. But so far as my knowledge of human nature goes it seems to me that this is essentially utopian, because the same influences that are brought to bear to bias the expert when he is called independently will be brought to bear upon him when he is called as a representative of the government. The same principle which lies at the bottom of the bringing of all suits will lie at the bottom of this matter, and that is money. Anything that pays well will be done. I think that all of us are familiar with the fact that politicians in general do not appoint competent medical men to public position. It is rather an exception when they do. There is another thing to consider and that is that unfortunately on account of defective human nature there is no more agreement among doctors with regard to their personal or professional qualifications than there is with regard to their personal opinions. As far as my observation goes it would be rather difficult to find them ready to give their unqualified approval of the appointment of any other man to a public professional position. In these things as in

others it is generally the negative man who will get the appointment because of outside influence. At the same time I am heartily in sympathy with anything that will take away the stigma on the profession which Dr. MILLARD calls attention to. I fully appreciate the principle which is at the bottom of it and I am heartily in sympathy with it.

Dr. W. A. JONES: I shall heartily second everything Dr. TOMLINSON has said, and I heartily agree with him.

Dr. MILLARD: I think Dr. TOMLINSON has made the strongest argument here this morning in favor of this reform. This bill is not a bill that applies to the medical profession alone; it applies to all classes of expert testimony in court that is based upon some scientific point, and when it is made to appear to the judge of that court by either of the attorneys, that it is a case for the electrical expert, or the engineering expert or the medical expert to testify,he will be called in. The judge will then and there appoint one or more persons to investigate the case. This appointment will not be a board of experts according to the French law and the German law, appointed for a period of years, but will be made up as follows: Suppose in the city of Minneapolis a murder is committed, and it appears that it is possibly a case of insanity. Now Judge Hicks, in his discretion, may appoint one or more persons to examine the criminal with a view of ascertaining if he be insane. It is natural to expect that the judge, in that case, would appoint some such a man as Dr. JONES, who confines his entire practice to that field of work. It is not natural to expect that this appointment could be or ever would be political. I believe in the purity of the judges of the District Court. I believe that the lives of criminals can be as safely entrusted to the discretion of these men as it can be to the discretion of any other body of men that may be found in the state. There is nothing about this act that could become political. The further argument by Dr. TOMLINSON that many of these cases are quasi-criminal or that they are due to laws of heredity, would be another argument in favor of a reform in this direction. Permit me to say in conclusion that my original remark applied solely, as you will see by the minutes, to the insanity of murderers and not to the insanity of general criminals.

Dr. TOMLINSON: Allow me just a moment now. I am very glad that Dr. MILLARD said what he did because it shows that he appreciated what I said. I recall a case in my experience in Pennsylvania, to show what results from the ordinary acceptation of the word "expert." It was a man who claimed to

be not insane and who excited a great deal of sympathy and was brought before the court for trial. The expert evidence given declared him to be insane and that he should be cared for; but the jury and the court accepted the testimony of two general practitioners, who had no expert practice or experience, he was acquitted and afterwards murdered his wife and two children. Of course it would not be right to offer the testimony of a surgeon in a case of insanity, or of the aurist where the evidence of a gynæcologist would be necessary, or of an oculist with regard to uterine diseases. With a bill of this kind we could have a distinct definition of what constitutes an expert. The value of any physician's testimony is in proportion to his capacity and skill in that particular branch of medicine upon which he is testifying.

Dr. MERRILL: It seems to me that Dr. TOMLINSON'S argument should make us all the more earnest in our attempt to get a bill through which will do away with this medical expert question as it stands at present. If you will consult works on medical jurisprudence, I think you will find every author, both in America and England, condemns our present method of taking medical expert testimony. They say that under the present system the testimony is virtually worthless, and they condemn it. It brings us into contempt before those jurists, and they all advocate some such plan as outlined in this bill, as being nearer the perfect method. The only way by which we can get such a bill through is for every member of this Society to take part in an earnest effort to reach and influence their representative or senator at the next legislature. There is no reason why we should not get this bill through just as we have all of our present medical legislation. You remember that at the time some of our bills bearing on medical legislation came up they met with the same opposition and were called impracticable; but by an earnest and systematic effort, they were put through and we have seen the benefit of them. We will see the same good results from this bill if it is taken up and pushed in the right manner.

Dr. MILLARD: I would move you, Mr. CHAIRMAN, that the doctor's bill be referred to a committee of five to be appointed by the President this morning; that a majority of that committee be made up of attorneys and that at least two of the committee be medical men. I now make the request that I be not named as a member of this committee. I feel that I have done my share towards medical legislation in the state of Minnesota, and I am through at least for the present. I request that there be a fair representation of attorneys on this commit-

tee because of the fact that the main opposition to this legislation will come from the legal profession, particularly from the younger members. If this legislation is secured it is going to restrict very greatly the amount of litigation in the state of Minnesota and it will save the tax payers many thousand dollars.

Motion seconded.

Dr. JACKSON: I would like to inquire if the bill provides for the appointment of an expert to hold office continually or for a separate expert for each action.

Dr. MERRILL: The court appoints whoever he sees fit.

Dr. JACKSON: For that one action.

Dr. MERRILL: Yes.

Dr. MILLARD'S motion was then voted upon, and there being some doubt as to the result, a rising vote was called for and taken and the motion was declared carried; fifteen members voted in the affirmative and ten in the negative.

NERVOUS DISEASES.

C. EUGENE RIGGS, A. M., M. D., CHAIRMAN.

THE RELATION OF SPINAL CONCUSSION TO HYSTERIA AND NEURASTHENIA.

BY C. EUGENE RIGGS, M. D.

Professor of Mental and Nervous Diseases in the University of Minnesota; Member of the American Neurological Society; Member of the American Electro-Therapeutic Association.

On this subject the neurologist is an iconoclast; he neither accepts on the one hand the conclusions of Mr. Erichsen, the expert for people who suffer from injured spines, nor on the other the overwrought theories of Mr. Page, who is professedly a railway surgeon.

The works of both these writers are from their respective points of view, able, but their conclusions as a whole are not satisfactory. The authoritative work upon this subject is yet to be written, but it will be written by a neurologist, not by asurgeon.

The views of both Erichsen and Page have been very happily summarized by Dr. C. L. Dana, as follows: Erichsen believes "that there is such a thing as concussion of the spinal cord, pure and simple, whereby the functions of the cord are temporarily suspended. That such a concussion of the cord may be followed by recovery (and generally is), or by death or chronic disease. That there is such a thing as concussion of the spine wherein the whole vertebral column with its envelopes and contents is jarred or injured in various ways. That this term concussion of the spine is one of widest inclusiveness, taking in symptoms of injury to the cord, of injury to the vertebral column and muscles, and of general nervous shock and its sequelæ. That an injury to the spine or body may prove most serious (to the spine especially), and that trivial injuries may cause grave organic disease of the cord or its membranes. That spinal anæmia, spinal irritation, hysteria and allied troubles may result from slight injuries to the spine and the nervous shock of the accidents causing them. That these last mentioned symptoms as well as those of a supposed meningo-myelitis may develop later and slowly after a period of comparative health, and that they are very serious in character. That malingering occurs and should be looked out for." Page maintains, on the other hand "that the existence of such a thing as concussion of the spinal cord, pure and simple, is unproved and extremely doubtful. That the spinal cord cannot be di-

rectly contused or injured by shakes, blows or violence to the body unless there is a fracture or dislocation of the spinal cord. That the so-called cases of concussion of the cord followed by softening and death or by symptoms of myelitis are cases of spinal apoplexy, or of dislocation or fracture with compression. That the term concussion of the spine is arbitrary, vague and misleading. That injuries to the spine very rarely if ever produce chronic, non-fatal forms of meningitis, myelitis or meningo-myelitis, so-called; but that the symptoms attributed to these conditions are the result of lumbago, strains and rupture of muscles and ligaments, injury to peripheral nerves; and general nervous shock, setting up neurasthenic and neuromimetic disorders. That these neurasthenic and neuro-mimetic disorders, though often serious, are not fatal, but tend toward recovery; and that the patient and litigation are often responsible for many of them. That the symptoms, being mostly subjective, it is difficult to exclude the subject. That some unconscious deception often occurs even with honest patients. That no serious visual troubles follow in these chronic functional disorders."*

Dr. Dana himself believes that we are justified in retaining the term concussion of the cord. Thorburn, like Page, a railway surgeon, is willing to admit what the latter denies, the possibility of spinal concussion, while maintaining its extreme rarity. A like opinion is held by Walton, of Boston. Numerous authorities, the older as well as the more recent, may be cited in recognition of the existence of spinal concussion: Boyer, Chas. Bell, Astley Cooper, Abercrombie, Erb, Leyden, Charcot, Vulpian, Jaccoud, Savory, Donnel, Ross, Buzzard, Hammond, Spitzka, Clevinger and others.

I have been accustomed in discussing spinal injuries before my classes to divide them into four categories:

1. Suspension of the activities of the cord without any recognizable organic disturbance.
2. Hysteria, neurasthenia and hypochondria.
3. Structural lesions, viz: hemorrhage, inflammatory conditions, acute and chronic, and secondary lesions, together with injuries to the bony canal and strain or rupture of the muscular and ligamentous structures and injury to the spinal nerves.
4. Hydrophobia and tetanus (Thorburn), and traumatic insanity.

There are instances on record in which the condition describ-

*Concussion of the Spine and its Relation to Neurasthenia and Hysteria. By C. L. Dana, A. M., M. D. *The Medical Record*, December 6, 1884.

ed in the first category being complete, death ensued. Examination of the cord by the naked eye and by the microscope a few days after the injury failed to show any evidence of mechanical solution of its continuity. Reynolds compares the loss of function thus following a spinal concussion to the demagnetization of a magnet which follows a sudden blow.

The "shock" or "collapse" often attendant upon this class of injuries undoubtedly results from a similar molecular disturbance of much less degree.

Thorburn tentatively, but I think very aptly, classifies the functional disturbances due to trauma as follows:

1. Acute effects.

(a.) General nervous depression, "shock" or "collapse."

(b.) A more localized and defined disturbance of cerebral (cortical) origin—"acute hysteria" or "hysterics."

2. Chronic after-effects.

(a.) General nervous depression—"neurasthenia."

(b.) A more localized and defined disturbance of cerebral (cortical) origin—"chronic hysteria."

The term traumatic neurosis is a cloak much resembling charity, with the difference that while the latter covers a multitude of sins the former conceals a vast amount of ignorance. "It is some special, I-know-not-what, hitherto undescribed pathological condition for which they (Oppenheim and Thomson) would find an unoccupied place in our nosological tables" (Charcot). It is in reality a combination of neurasthenia and hysteria, chiefly the latter.

A sharp distinction should be made between neurasthenia and hysteria, the former being of far more frequent occurrence than the latter. "If the pathogeny of hysteria is 'suggestion' or 'auto-suggestion' and that of neurasthenia merely exhaustion, there is a clear theoretical as well as a practical distinction" (Thorburn).

By hysteria we understand an instability of the cortical cell characterized by motor, sensory, vaso-motor, secretory, trophic and inhibitory disturbances. There are usually two factors in the development of traumatic hysteria, the trauma itself and the psychical influence of the shock. The first factor is usually present, the latter invariably so. Dr. Gilles de la Tourette lays great stress on the fact that hysteria is a psychical disease characterized by great "suggestability" of the patients, hence the superficial view held by the profession in general that the subject is lying or that he is feigning his symptoms. Dr. Dana states emphatically that the condition which results in hysteria and neu-

rasthenia is "a real pathological one, and the sufferers are unquestionably sometimes as much injured as if they had a broken arm or leg or an actual injury to the cord." As illustrative of how slight may be the physical injury which, together with the shock, may give rise to this serious hysterical condition, I may cite a case given by Charcot:

The patient three years previous "was lowering a barrel of wine into the cellar when the cord which held it broke; the barrel rolled down the steps and he would infallibly have been crushed, had he not had just time to jump to one side. However, he could not do it quickly enough to avoid a slight wound of the left hand. In spite of the fright he had received, he was able to get up and help raise the barrel; but five minutes later he had a loss of consciousness which lasted 20 minutes. On coming to he was unable to walk, so feeble were his legs, and they were obliged to take him home in a cab. For two days he was quite unable to work, at night his sleep was disturbed by fearful dreams, and broken by cries of 'come to me I am being killed!' and he saw in his dreams again the scene of the cellar. He did, however, recommence his work, but *ten days after the accident*, in the middle of the night, he had his *first attack of hystero-epilepsy*. Since that time the attacks have returned almost regularly every alternate month, sometimes in the interval; and during the night, whether at the moment of his first sleep or at the time of waking, he was sorely troubled by visions of ferocious animals."

The persistence of the hysterical state is usually more marked in the male than in the female. This condition, psychic though it may be, is far too serious to be dismissed with a sneer as is so frequently done. Too often its phenomena (even in women) are "unchanging, permanent,extremely difficult to modify" and defy all therapeutical measures for their relief. "Cases of this kind," says Charcot, "are very numerous, even if it is true that they do not constitute the majority."

Hysteria readily falls into two divisions:

a. Acute or explosive hysteria.

b. Chronic or stable hysteria (Thorburn). The loss of inhibitory control following injury, giving rise to hysterical manifestations, such as loud screams, cries and immoderate laughter, and even convulsive seizures is of so common occurrence as to call for only a passing notice. When the nervous explosion is past there remains only a slight lassitude or a mild neurasthenic state. There is one aspect, however, of acute hysteria following trauma which must not be overlooked. I refer to the condition

of unconsciousness through which this class of patients frequently pass. It differs radically from that state of unconsciousness resulting from brain concussion; Thorburn compares it to a state of somnambulism or minor hypnotism, but it seems to me to resemble more closely the condition known as epileptic automatism. Often there occurs during this unconscious state something like auto-suggestion. An illustration in point is given by Thorburn, that of a man who was shaken in a very slight collision. "He was travelling with his wife and after describing how he himself was hurt, he told me that the latter fell forward with her left eye on to the point of an umbrella held by a person opposite to her, that this umbrella struck her just above the eye and knocked it out on to her cheek; and that he then placed the hollow of his hand over her eye and pushed it back. That the man believed his tale I have little doubt, as it was too ridiculous for a fraud, and the most rational explanation seems to be that this was an hysterical dream." This peculiar phenomenon is alike transient in character with the more usual symptoms of acute hysteria; it is, however, impossible to convince these persons of the unreality of their experiences.

It is well to bear in mind that the term chronic, as applied to hysteria, is not used in the ordinary acceptation of the word. It does not refer to time but rather to the character of the disease.

Chronic hysteria manifests various types: Hystero-epilepsy with distinct crises; by which I mean that the patient is the subject of two distinct diseases, hysteria and epilepsy; hystero-epilepsy with mixed crises, which shows an epileptoid state but which is nevertheless pure hysteria; and hysteria pure and simple, without other complications or manifestations.

Hysterical amaurosis and amblyopia are interesting phenomena. Retraction or limitation of the visual or color fields is of frequent occurrence. Concerning the retraction of the visual field Dr. Charcot says: "The patient can neither simulate nor exaggerate it, and not uncommonly it is very accentuated although the troubles of general sensibility may be but little marked." Not long since I saw a most interesting case of hysteria due to trauma. The patient, a fireman, had fallen from his locomotive, striking his head against the railway ties; but aside from being rendered unconscious for a time by the fall and suffering from a scalp wound, no other injuries were apparent. In a short time he seemed to have made a perfect recovery, but a few weeks before the coming on of the suit which he had brought for damages, he developed a severe chronic hysteria. There was entire loss of sensibility limited to one half of the body, loss of special

sensibility of the same side, together with paresis and amblyopia. While this case was not the result of a spinal concussion it was caused by a shock, and fairly typifies similar conditions arising from concussion.

Traumatic neurasthenia is of very frequent occurrence and is as much a clinical entity as the simple form of the disease. But in an affection of this nature where the symptoms are so largely subjective, it is difficult to say which are real and which are simulated by the patient; it requires the greatest care therefore upon the part of the physician to guard himself against imposition. Dr. Dana well says that we "need more objective tests for the purpose of determining these subjective neuroses."

There came to me for consultation a year ago a young lady, who three years before, while skating, fell heavily upon the buttocks. Aside from a slight shock at the time she suffered no immediate inconvenience from the accident. After a few weeks, however, she passed into a neurasthenic condition. Previous to the accident she had been strong and vigorous; after the development of this condition she could not endure the least exertion; a little unusual fatigue would cause her to take to her bed for several days. She suffered frequently also during this time from syncope, headache and insomnia. Her spine was extremely sensitive. There was no evidence of hysteria. Persisten t treatment ameliorated but was far from curing her condition.

The victims of traumatic neurasthenia are thoroughly and abjectly miserable; they are given to morbid introspection; in fact their condition is usually characterized by a dash of hypochondria. They complain of pain in various parts of the body, especially at the base of the brain. The reflexes, both muscle and cutaneous, are exaggerated. I have now under my care a patient in whom the latter reflexes are astonishingly active upon the slightest irritation; the cremasteric can be obtained by the gentlest touch upon the inside of the thigh. The bowels are usually constipated; there may be general or localized sweating. Sleep is usually disturbed, the patient suffering from frightful dreams and night terrors, the dreams usually reverting for their subject to the accident which caused the neurasthenic condition. Very frequently there is associated with the neurasthenia evidence of sprain of the vertebral ligaments and muscles, and injury to the spinal nerves. A lithæmic condition often complicates traumatic neurasthenia.

According to good authority the prognosis of hysteria and neurasthenia due to trauma is good for steady improvement, but not so promising as regards complete recovery.

SPINAL CONCUSSION IN ITS RELATION TO MYELITIS.

ARTHUR SWEENEY, M. D.

The essential point in this discussion is whether a so-called functional trouble is apt to produce organic lesion.

While ordinarily functional disturbances are the result of irritation, and subside on the removal of the cause or persist indefinitely without change appreciable by our methods of observation, still we cannot but recognize that disturbance of function and nutrition is capable of altering the anatomical condition of parts even to the point of establishing an organic disease. Such a purely functional condition as hysterical paralysis is accompanied by atrophy, a persistent congestion of a kidney is followed by an interstitial nephritis, and prolonged contracture results in shortening of the bony structures and modification of the form of joints. Not less easy is it to believe that a persistent congestion of the vessels of the cord may so modify its nutrition as to give rise to disease.

In most of the cases of spinal concussion there is hyperæmia of the cord. The circumstance of the accident coming at a time when danger is not thought of produces a profound psychical shock, sufficient to disturb the normal equilibrium of the brain cells which control the vaso-motor nerves. The vessels of the cord are small and free from anastomoses, conditions favorable to vascular disturbances, and any stimulation, whether reflex or psychical capable of paralyzing the vaso-motor apparatus leads to dilatation of the vessels and the establishment of passive hyperæmia. The symptoms of spinal concussion which are earliest developed may be fairly ascribed to vascular disturbance of this character: pain in the back, fatigue on exertion, heaviness of the feet, numbness, tingling, formication, hyperæsthesia, increase of the patella tendon reflex, and irritability of the bladder. These are among the classic symptoms of spinal concussion, and are equally characteristic of spinal congestion.

It is when this vascular change is extreme and prolonged that it is capable of affecting nutrition so as to produce destruction of the tissues of the cord. Occasionally at the outset minute structural change has resulted from the sudden congestion, producing signs which are appreciable within a few days. This is usually of the nature of punctate hemorrhages in the substance of the cord, producing foci of softening which may or may not be accompanied by inflammatory action. More often the process is established more gradually, the continuance of the con-

gestion impairing nutrition of the nerve tissue and causing a degeneration of substance in the form of disseminated rather than focal myelitis.

There is an almost constant relation between congestion and myelitis. That this is the case is demonstrated by analogous cases not involved in the maze of litigation. Among the recognized causes of the disease are sexual excesses and excessive activity of the muscles. As we know, functional activity is always accompanied by an increased blood supply, amounting when prolonged to passive congestion. Exposure to cold, as in bathing when the skin is hot, drives the blood from the periphery to more central portions of the body, producing spinal congestion and a destructive lesion of the cord. The sudden cessation of menstruation, capable of producing vicarious hemorrhages of the stomach, nose and lungs, is not less capable of causing a hyperæmia of the cord with hemorrhagic foci and subsequent myelitis. Neurasthenia gravis, whose spinal symptoms are essentially those of congestion, we know to be followed in a certain percentage of cases by organic disease of the cord.

All these, which are recognized as causes of myelitis, act in the manner indicated, that is by congestion, upon the nutrition of the cord, or by hemorrhage within its substance, producing focal or disseminated lesions, either acute or chronic.

Injury, though apparently slight and transient, may be the starting point of a chronic disease. We cannot without a full knowledge of the anatomy of the spinal column and its investing substances, appreciate how intimately connected are all these parts. We recognize the existence of an inflammatory condition of the muscles following trauma in other parts, and are cognizant of the serious nature of strains of ligamentous tissue in the ankle and knee joint, with their consequent synovitis. And we cannot overlook the extreme probability of the twisting of delicate ligaments which bind the bodies and processes of the vertebræ together, in sufficient degree to establish quite as severe a synovitis of the vertebral articulations. The vertebræ are kept in apposition and limited in their motion by unyielding ligaments. The thick bundles of muscles hold the body erect and perform the various motions, such as bending and rotation. As ordinarily seated in a car the muscles are relaxed, and when a sudden, unexpected shock is received the force is exerted upon the spinal column unsupported by the muscles, and is expended upon the relatively loose though unyielding ligaments. Next interior to and lining the capsular ligaments is the dura, and then come the more delicate membranes of the

cord itself, which in a certain percentage of cases are involved in the inflammatory process, with the result of a meningitis which not rarely involves the cord. Or the posterior nerve-roots becoming involved a myelitis is established by extension along their course. Gowers emphasizes the intimate relation which exists in these cases between adjacent inflammation and chronic myelitis, and the fact that the spinal pain so often complained of when there is no mark of bruising may be due to such a condition as described above.

We have now to consider the various ways in which this disease manifests itself following an accident, and the pathological changes which take place. In acute cases, where evidence of destructive lesion is manifest during the first fortnight, the disease is usually localized over a small area, especially if the force has been exerted over a small portion of the column. Here it is that we find acute softening, in which the cells are swollen and disintegrated, with the formation of vacuoles, dilatation of the capillaries, extravasation of blood in the form of minute hemorrhages, and infiltration of leucocytes. In cases of longer duration there is evidence of wasting of the nerve fibres and increase in the amount of interstitial tissue. There may exist ill-defined cavities from the absorption of broken down tissue. In this form the disease is not usually local, but is scattered over a large area in disseminated patches, including any portion of the structure, but usually in the enlargments involving the anterior horns.

For convenience of study it is usual to classify these cases as acute, subacute or chronic, the first division including those cases arising during the first two weeks; the second, those observed during the first two or three months; and the third those of later origin. The acute variety is usually distinctly localized and manifests its destructive nature by rapid development of paralysis, trophic changes, involvement of the rectum and bladder, bedsores, and usually terminates in death. In the subacute form the initial symptoms are so slight and unimportant that the patient may travel some distance or engage in work with but little discomfort for some time, until the gradual development of more serious symptoms calls his attention to the fact that a serious disease is present. In the chronic form there is an interval of several months between the accident and the development of grave symptoms, which may progress very slowly. It is in this class of cases that the greatest amount of doubt exists as to diagnosis. The chain of subjective symptoms, which usually exist in greater or less degree, is in many cases the only

link which connects this later condition with the accident. So closely do the symptoms of this condition resemble those of the system diseases of the cord, that it is mainly by the absence of other adequate causes that the lesion is ascribed to the accident. It is these cases which give the greatest trouble, and which are accompanied by the greatest difficulty of diagnosis. They are exceptionally perplexing cases for the physician, as they are the ones which are most frequently contested with vigor in the courts, and present symptoms which are readily feigned. Hence it is of the greatest importance to establish the genuineness of the symptoms. Usually it is not difficult if care, patience and ordinary skill be exercised.

As a rule system diseases of the cord are not accompanied by many psychical or emotional symptoms, in other words those who suffer from locomotor ataxia and allied diseases are not "nervous" as that word is popularly used. Yet in cases following injury there is nearly always, prior to the development of myelitis and accompanying the original shock, a considerable degree of psychical disturbance due to the suddenness and the alarming character of the accident, so that it is not fair in these cases to conclude from the preponderance of subjective signs that objective symptoms are absent or simulated. The nature of the paralysis is not difficult to discover, the electrical reaction being usually modified in cases of organic disease. Careful observation of a malingerer when he thinks he is not watched will usually be rewarded by success. Involuntary movement when going to and from his carriage, or when his leg is placed in a cramped position will frequently betray the deception. Coldness of the paralyzed member is a valuable aid in diagnosis, as well as the character of circulation; in functional cases the limb being generally moist and traversed by dilated capillaries, and in organic disease usually dry and free from venous engorgement. Atrophy is a reliable sign when rapid and well marked, though also present in lesser degree in hysteria from disuse. Anæsthesia and hyperæsthesia are difficult to demonstrate, yet it is possible absolutely to determine whether or not it is genuine. Whenever a strong stimulation is applied to the skin while the reflex arc is intact it is followed by dilatation of the pupil. If the symptom is functional or assumed, irritation of the anæsthetic area will produce this pupillary reaction, but if the reflex arc is broken as in organic disease, the pupils will not respond. In a similar manner, if the hyperæsthesia is organic, a dilatation of the pupil will be caused by a lesser degree of stimulation than in simulated cases.

Symptoms of especial value in the diagnosis of myelitis are numbness and tingling. When these are persistent and increasing in severity they are of considerable significance. Ankle clonus is usually a reliable evidence of organic disease. It is true that it sometimes is found in functional troubles, but it is not as regular and rythmical as in more grave cases. Difference in strength of the muscles of the two sides is of value, especially if it exist in special groups of muscles such as those of the hip, shoulder and ankle. The manometer is of little value as a test because one can easily exert less strength with one hand than with the other. Knee jerk is of very little value. Vesical or rectal involvement almost always indicates a serious lesion. The existence of well marked girdle pains is one of the most reliable signs of organic disease, and is always absent in functional disease. Spinal pain and tenderness is of little value, being easily assumed, and more characteristic as a rule of functional than of organic disease.

It is of less importance from a medico-legal standpoint to affirm the relation which exists between a functional disturbance and an organic disease, than to determine in a given case of spinal concussion the probability of a myelitis developing. It is a safe rule to decline to express an opinion until sufficient time has elapsed to allow grave symptoms to manifest themselves. The longer the time which passes after the first six months, without the development of serious symptoms, the less the probability that they will appear at all, though we must bear in mind the possibility of such a condition arising after years. When we consider the great number of cases of concussion of the spine which occur in which myelitis does not develop, we must agree that the condition is by no means frequent. But that it occasionally follows I think is scarcely to be denied. It is in those cases in which the symptoms are of severe type and long continued that it is most likely to develop. I have in mind a case which came to me recently of this character, in a patient who was not interested in any litigation for the recovery of damages, and in which the hysterical or neurotic element could be entirely eliminated. A female half-breed Chippewa was thrown from a wagon nine months ago and struck on her left shoulder, being unhurt with the exception of some slight bruises. Three weeks later her feet felt heavy and numb. In six weeks girdle pains developed, followed by tenderness of the spine at the 4th dorsal vertebra and increasing weakness of the legs. At the end of four months there was complete loss of sensation and motion in both limbs, with knee-jerk, ankle clonus and spasm

of the most pronounced type and extreme atrophy. Sensation returned after six months, but her condition is one typical of spastic paraplegia, dependent upon spinal concussion.

To conclude, myelitis in connection with spinal concussion develops from intense or long continued congestion, from inflammation of adjacent parts or by extension along degenerated nerve roots. It develops within a few weeks, a few months, or longer. In the chronic form it is connected only by a chain of symptoms, generally subjective, with the accident. Its diagnosis is attended with little difficulty in well marked cases, but calls for great care and good judgment in cases which are obscure or indefinite, especially if they be involved in litigation. While a great number of cases of so-called spinal concussion occur without the development of this complication, yet it is to be regarded as unusual rather than rare. It is absolutely impossible to predictate in what case of spinal concussion myelitis may or may not develop, yet it is impossible to say until a sufficient time has elapsed that it will not be developed.

THE RELATION OF SPINAL CONCUSSION TO MENTAL ABERRATION.

H. A. Tomlinson, M. D.

This subject is interesting to the psychiatrist on account of the conditions present in those suffering from so-called spinal concussion being a causative factor in the production of insanity in those individuals who have a neurotic heredity, rather than as a direct cause of mental aberration in those who are mentally sound. The mental aberration present in the victims of spinal concussion is not often of a nature or sufficiently great to make the confinement of the patient in an asylum necessary, and in the majority of cases is not sufficiently conspicuous to attract attention, independently of the sensory and motor disturbances of the general nervous system usually so prominent. However there are a certain number of cases where spinal concussion has determined the advent of insanity in a neurotic individual, who otherwise might have escaped, and have borne the more usual trials and accidents of life with reasonable equanimity, and without apparent disturbance of his mental balance. In these individuals the manifestations of insanity in no wise differ from those due to other causes which determine the appearance of mental aberration in those having an hereditary tendency.

Studying the subject, however, from the broader standpoint

of the influence of shock in general in the production of degeneration in the nervous system, we are in a position to better understand the modus operandi of the forces which produce the disastrous results now known to follow railway and other similar accidents. The first effect of shock to the nervous system is to produce inhibition of function, and if the shock be severe and general enough, destruction of life, as is witnessed in blows on the temple or in the epigastric region. If, however, the shock be milder, the inhibition of function is temporary and the patient sooner or later returns to his normal condition. Between these two there are degrees of shock which, although they do not destroy life, bring about changes in the nervous system and in the manifestations of its functional activities, which change the character of the individual and destroy his capacity for connected or continuous occupation. As a rule these changes are manifested most conspicuously in the motor activities, the mental disturbance being only what is incidental to the existing neurasthenia. There is a degree of mental aberration in all cases of so-called railway spine or railway brain which is tolerably constant, and which more or less seriously affects the victim's personal welfare and his relations to those around him. The amount of disturbance will in each case depend upon the degree of vigor in the nervous organization of the individual and the gravity of the shock. This disturbance will show itself in the form of changes of character, as witnessed in unusual irritability, peevishness, exaggerated self consciousness, and in some cases even hypochondriasis. Along with these and partially as a result of them will go failure of memory and attention, incapacity for continuous occupation, and inability to perform the more finely coördinated muscular movements. As a result of these changes the individual becomes morose and despondent, or even actually insane, if his normal mental organization was unstable.

To get a proper understanding of what is constituted in these changes, it will be necessary to study briefly the physiology of cerebro-spinal functioning. That which differentiates the functional nerve cell from other organic cells is its excess of irritability, which is due to the instability of its compounded elements, and it depends for its integrity upon the perfection of its reconstitution. These functional nerve cells are accumulated in the cortex and nuclei of the brain, in the ganglia and in the spinal cord and sympathetic system. The functional activity of the general nervous system is manifested in the perception, transmission and relation of external stimuli, and in the coördinate

discharge of motor impulses in the manifestation of muscular and visceral activity. This adaptation of internal to external relations constitutes the life of the individual, and as the tendency is for all activities which persist to become definite and uniform, most of those which have to do with the vegetative and locomotive functions become automatic, and are performed without the intervention of consciousness. It will be readily understood that the welfare of this mechanism will depend upon its proper nutrition, and the absence of any unusual or excessive strain. Should any strain occur, the result would be a disturbance of this definiteness and uniformity in proportion to the amount and character of the strain, while the persistence of the disturbance will depend upon the degree of interference with nutrition and the relative perfection of the different parts of the mechanism.

The difference in the severity of the symptoms manifested in different individuals subject to the same degree of shock represents the relative imperfection of structure among them, or the degree in which the vigor of their nervous mechanism has been impaired by preëxisting disease or other cause of impaired nutrition. This is illustrated by the fact that of two individuals exposed to the same source of shock, one will recover entirely, even if his bodily injuries have been the more severe, while the other, even after he recovers from his injuries, will remain a nervous invalid, presenting a number or all of the conditions and symptoms referred to as characteristic of shock to the general nervous system. It is also a fact that some victims of spinal concussion recover entirely after a time, some recover under the stimulus of a favorable verdict for damages, while others remain invalids permanently.

As stated in the beginning of this paper, the mental symptoms of spinal concussion are as a rule not sufficiently conspicuous to attract attention, and are dominated by the other symptoms referable to the general nervous system. However, mental aberration does exist in most cases of spinal concussion, varying in degree according to the natural stability of the victim's mental organization. This is manifested by the change of character, which as a rule is permanent; the failure of memory and attention; the lessened or lost capacity for continuous mental effort; and even in the mildest cases, the loss of self-control, manifested by impatience, irritability and complete loss of "grit", so that the victim succumbs to trifling disturbances, is exhausted by slight muscular effort, and on account of these conditions becomes abnormally self-conscious, recording all

experiences in a staccato key and looking upon every relation in life from the standpoint of individual personality; realizing vividly the responsibility of others toward themselves, which they magnify, but losing sight entirely of their responsibility toward others. These are the most unhappy people in the world, living always on a transcendental plane of nervous erethism, magnifying every ordinary sensation into a profound emotion, seeing in every call for muscular effort an herculean task, and resenting the apparent want of sympathy shown in the failure of those around them to appreciate things as they see them; while at the same time their exaggerated egotism makes it impossible for them to realize that there is any other standard but their own. From this form down to actual mania or degenerative insanity there may be all grades of reduction. As a rule, however, when the mental symptoms become conspicuous enough to make the victim's seclusion necessary, the spinal symptoms are lost sight of in the insanity, and it is no longer regarded as a case of spinal concussion. Yet the shock was the determining cause of the insanity, just as much as it is the cause of the neurasthenic symptoms supposed to be typical of spinal concussion.

It is unfortunate that the laity, and, to a great extent, the profession at large have no definitely formed conception of what degree of mental perversion constitutes insanity. If only that degree of perversion which is manifested in acute mania or melancholia, with suicidal or homicidal impulse, or dementia, is regarded as insanity, or if the ordinary legal definition is accepted, it might safely be asserted that very few victims of spinal concussion suffered from mental aberration. But if we take the broader view and regard any departure from the normal standard of conduct of the individual as insanity, we are in a better position to appreciate the presence and relative importance of mental aberration in these cases. It may make my meaning more clear to quote a definition of insanity which I have made elsewhere: "In seeking a standard by which to judge of an individual's sanity or insanity, we are forced to create an arbitrary, and, in a measure, an ideal individual, with whom we can compare all men, and judge of the existence and degree of insanity in them by the extent of the departure from this standard. This ideal individual can be described most definitely and simply by Herbert Spencer's abbreviated definition of life, as an individual who can perfectly 'adapt internal to external relations.' Any deviation from this standard is literally insanity, although it is not recognized as such until the de-

viation becomes so marked as to become conspicuous, on account of so faulty an adaptation of internal relations as to materially interfere with the individual's welfare and his relations to those around him. The various forms which this deviation from the normal standard may take, will be governed, of course, by the degree of imperfection in the nervous organization in the individual and the influence of environment." In forming our estimate of an individual's mental soundness, we first try to find out what his normal mental condition is, and then compare the disturbance present with the changes in his environment. If we find that the individual is disturbed by conditions normally inoperative, that this disturbance interferes with his proper appreciation of his relations to others, while at the same time it unfits him to guide his conduct so as to obtain his ends, the conclusion follows that he is to that degree insane. If the disturbance now subsides, he will recover his normal mental stability; but if from the operation of defective organization or want of proper environment the disturbance continues, all these manifestations of abnormal activity will increase, and the mental instability will become so pronounced and conspicuous as to deprive the individual of all power to guide his activities or to control his conduct.

It will be apparent from what I have said, if my views are accepted, that no rules can be laid down for the recognition of the degree of mental aberration present in any individual suffering from shock; but that we must be guided by the history of the individual case, and base our judgment upon a comparison of the patient's condition as we find him, with what it would be under similar conditions, with the element of shock eliminated.

Insanity following traumatism is not uncommon, especially after injuries to the head, but sometimes the mental symptoms do not make their appearance until a considerable time after the injury. In those cases where the insanity is not manifested for some time after the injury, it is probable that the mental aberration is incident to nutritive changes in the cortex, resulting from inflammatory changes in the meninges, which are chronic in their nature and progress so slowly that the change in the individual's character and conduct does not attract notice, because it is so gradual as to be accepted as a matter of course by the family and friends, until some acute outbreak of excitement or the development of hallucination or persecutory delusion makes the insanity manifest.

These cases are essentially chronic, and seldom recover, especially if the injury occurs after middle life; but they some-

times remain stationary for long periods, especially if the surroundings of the patient are such as to keep him free from actively disturbing conditions.

In those cases, however, where the manifestation of mental aberration follows immediately or soon after the injury, it is almost invaribly due to the shock resulting therefrom, which causes a disturbance of the nutrition of the brain sufficiently profound to interfere materially with cerebro-spinal functioning.

It is not necessary to enumerate here the ways in which the resulting aberration will manifest itself; suffice it to say, that the changes in the patient's character and conduct are almost always those previously described as following so-called "railway spine and brain."

These cases quite frequently recover, especially where the disturbance occurs in early life and is manifested by confusion, irritability, loss of self control, indefinite persecutory delusions and apprehension In one case occurring in my experience, these conditions persisted for a long time, then developing into stuporous depression, but finally disappeared and the patient recovered. This case, analogous in its causation and mode of onset to those forms of mental disturbance produced by shock, will serve to illustrate the mode of development in these cases. Mr. M., forty-one years old, was employed by a large manufacturing concern in Philadelphia as a packer and shipper. In the absence of another employe, he was sent to take charge of an exhibit of drugs at the Minneapolis exposition in the fall of 1889. He was very much disturbed on account of want of confidence in his ability to carry out the undertaking, and started in considerable trepidation on his journey. While in Chicago, on his way to Minneapolis, he was taken violently ill with diarrhœa, but continued his journey despite his condition. The train on which he was a passenger was attacked by the famous Wisconsin train robber, and he was very much frightened by the occurrence. He carried out his mission in Minneapolis, but during the latter part of the time he sufered very much from headache, which persisted after he came home, until finally he was obliged to give up work. He became morose, silent, irritable and suspicious; also seemed to be in constant dread of some calamity, and was especially anxious that all parts of the house should be well lighted. (It will be remembered that the train was attacked at night, and the patient was in the sleeper, which is dimly lighted at night). He became more and more depressed, until finally he refused to eat. He was brought to the asylum in February, 1890. For

a time after the change he improved, but in the spring he began to grow more and more stupid, until finally he refused to eat, evacuated his bladder and bowels in the bed or in his clothes, and finally had to be catheterized for retention incontinence. He was fed mechanically for six weeks, and during most of the time was in a profoundly stuporous condition. However, he began to improve at the end of this time and was discharged very much improved in October, 1890. About a month after his discharge, while being driven through the park by a friend, he suddenly exclaimed, "it has been lifted from me." He now told his friend that he realized what his condition had been, but that he had not been able to get out of it. Now, however, everything was clear, and he was himself again.

There was no history of neurotic heredity in this case, although the personal history of the patient gave evidence of a neurotic temperament, as manifested by irritable temper and certain eccentricities of habit. The assumption of unusual responsibility, the exhaustion of acute disease and the shock of fright, coupled with the continued strain of his undertaking were sufficient to interfere with the nutrition of the brain to that extent which produced a gradually progressive inhibition of its higher functions, finally ending in stuporous depression, from which he as gradually recovered. The final sudden disappearance of inhibition is often seen in other forms of insanity, due to exhausting disease or the shock from grief or fear.

My object in referring to insanity due to traumatism has been to show the analogy between mental aberration thus produced and the milder forms associated with shock from railway or similar injuries. It is to be further noted that the insanity following traumatism is always engrafted upon an unstable nervous organization, either hereditary, acquired through causes operative in childhood, or the result of intoxication with alcohol, or syphilis. Now, when we consider that a similar nervous instability due to like causes may precede an accident, resulting in so-called spinal or cerebral concussion, we can readily understand how the train of symptoms of mental aberration usually seen may follow, and we will be placed in a position to appreciate the fact that these apparently causeless conditions really have an active predisposing cause, while we will be able to understand that the victims of railway and similar accidents are not necessarily malingerers.

THE MEDICO-LEGAL RELATIONS OF SPINAL CONCUSSION.

R. O. BEARD, M. D.

Human credulity is in inverse ratio to human knowledge. It is the body servant of cupidity and fraud. Ignorance always affords ample room for the pretensions of the unscrupulous, and easily puts its victims in the toils of superstition, empiricism and dogma. But where the voice of scientific authority speaks in unmistakably sincere tones, though the skeptic and the agnostic may still justify their existence, the *raison d'etre* of the credulous is abolished. As science clears up one field after another of medical knowledge, the charlatans of medicine and the law are driven to their last refuge in those few, dark or twilighted corners of incomplete investigation which still remain. One of these dusky corners, in which these disreputable characters still linger, we are trying to illuminate to-day.

A year ago this Society listened to an able paper upon this self-same topic, the author of which arraigned neurology as the most inexact of medical specialities. I believe he was in error. Dealing with the most intricate of the sciences in medicine, concerned with the most complex and the most important structures of the animal body, the special students of the nervous system—among the most conservative of scientists—have found it better sometimes to confess tentative ignorance than to hazard rash conclusions. They have simply held it wiser to preserve that dignity of tread which keeps time with the cautious footsteps of angels, than to share the irreverent inrush of zealous but unscientific folly. So, when I say that the last word has not yet been spoken upon this debated topic, "railway spine," I do not confess to any inexactitude in the scientific methods which neurologists have brought to bear upon its study. I simply express the conviction, from a medico-legal standpoint, that the premises upon which this doctrine of so-called spinal concussion has been based, must be better proven before the conclusions of its advocates can be finally accepted. It is a curious fact that the chief expounders of this doctrine have been surgeons rather than neurologists, for, traumatic in its causation though it be, its supposed results are so purely neuroses that the specialist in that field is, in the nature of things, most competent to pass judgment upon them.

My colleague, the chairman of the section, has asked me to discuss the question in its medico-legal bearings, but I find it

difficult, if not impossible to do so, without opening up those phases of the subject which have been so ably treated by my predecessors on the floor. I am fortunate, therefore, to have the privilege of the closing paper in this interesting symposium, and I shall endeavor to merit the opportunity by summarizing very briefly the essential facts, as they present themselves to the medical jurist.

(1) What is the definition of spinal concussion?

(2) Is there actually any such thing as concussion of the cord?

(3) Is there any definite consensus of symptoms which can be properly arrayed under this term?

(4) Are the symptoms of spinal concussion dependent upon recognized or recognizable lesions of the cord?

(5) What and where are those lesions?

(6) What is the prognosis of so-called spinal concussion?

These questions, in varied form, are put to the expert witness in a damage suit, based upon the supposed existence of "railway spine."

(1) Spinal concussion—what is it? It is defined as a temporary vibration of the substance of the cord, caused by mechanical shock, and followed, sometimes, by symptoms attributed thereto. In using this definition let us avoid a common confusion of terms. Traumatic or physical shock, as I shall presently insist, must be distinguished from shock in the surgical or physiological sense.

(2) Is there actually any such thing as concussion of the cord? Can any force be so directed upon the cord, inclosed and suspended as it is, in the vertebral canal, as to cause this phenomenon? Opinions have differed upon this point. Erichsen, Vibert, Oppenheim, Strumpell and others have answered it in the affirmative. Knapp says: "Concussion of the cord, although probable, is still a matter of doubt." Page and his followers disbelieve in more than its most rare occurrence. The environment of the cord argues strongly against the frequency of the event, or its causation by moderate violence. Parts of the cord appear to be more susceptible to physical shock than others. The event is largely determined by the direction of the force, or by the point of impact. A direct blow upon the vertebral column, or a fall immediately upon the back, is more apt to be disastrous to the cord than indirect violence received upon the feet or head. The suspension of the cord and the elasticity of its membranes, permit greater mobility in the vertical than in the anteroposterior direction. Contre coup is less likely to ex-

pend itself upon the cord when the shock is applied to either extremity of the body than when it falls upon the unyielding walls of the vertebral column. Nevertheless, the evidence of hemorrhage within the cord, and even of laceration of its substance proper, is too good to leave room for doubt that concussion can and sometimes does occur.

Having conceded this much, are we necessarily committed to an affirmative reply to the next question?

(3) Is there any definite consensus of symptoms, distinctly referable to this cause, and properly arrayed under the term spinal concussion?

I think the medical expert may say very positively, No. So vagrant and so variant are the results which have been suggested by the multitude of writers upon this theme, that each case is compelled by this very fecundity of symptoms, to come to judgment by itself.

And here the limits of our definition must be enforced. Concussion is, in itself, a transient condition. The term cannot properly be applied to its chameleon-like consequences, cannot be made to do logical duty for a heterogeneous series of effects, which are equally induced by other causes, and which differ with every degree, with every quality, with every location of the primal injury. The event which we call concussion does not persist. It may be, perchance, as slight in its consequences and as short-lived in its existence as an attack of syncope. It is as irrational to attempt to gather its variable sequelæ together under its narrow name as it would be to call albuminuria diphtheria, or rheumatism scarlatina, because they often complicate these diseases; or to term all imbeciles epileptics because epilepsy sometimes carries imbecility in its train.

The soundness of this argument must be tested by the next inquiry:

(4) Are the symptoms referred to spinal concussion always dependent upon unrecognized or recognizable lesions of the cord? If they are then they deserve a recognition and a name.

But so far as present methods of investigation are able to carry them, all students of this subject agree that no constant lesions are to be found. In only a minority of even those cases which have terminated fatally, have lesions of the cord been discovered. But let us hasten to add that this is no argument for their non-existence. In tissues so delicate as the grey matter of the nervous system, lesions of grave import may well escape our comparatively gross methods of observation. By all

the testimony which physiology affords of the inevitable relationship which exists between functional activity and structural change in every tissue cell, let us protest against the perpetuation of that worn-out distinction, in our classification of disease, between functional and organic disorders. A malady is merely functional when our ignorance or inability veils that structural departure from the normal which constitutes, however slight it may be, a lesion.

If spinal concussion induces, reflexly or directly, a perversion of spinal function, it induces a molecular change in the cell life of the cord. If this be so, then undiscoverable lesions may exist. But does other evidence point to their existence? This query takes me back to the caution I suggested above, regarding the distinction to be emphasized between shock of the physical order and shock of the physiological sense, as applied to the cord. In the observance of this distinction we may, I believe, eliminate altogether from the category of cases of spinal concussion—from that great army of unfortunates or frauds who count or claim themselves sufferers from railway spine—a large number, perhaps the majority, of those who have been by popular, and too often by professional consent, ranked in this company.

A railway accident occurs; a car, perchance, is derailed; its occupants are indiscriminately shaken up; with more or less violence they are thrown into contact with the furniture of the car; certain of them, neurotic in tendency, sharing that universal dread of everything that borders on a railway accident, are thrown into instant and intense excitement. So profound a summation of reflexes is immediately aroused and suddenly thrown upon the nerve centres, that physiological shock, an exhaustion or inhibition of these nerve centres, ensues. Possibly the individual faints; rouses to find himself in a state of collapse; the foundations laid for weeks of hysteria or neurasthenia. How easy it is for patients and friends and counsel, and even physicians, to jump to the ready conclusion, railway spine. If nervous shock, the sudden expenditure of nervous energy, which leaves the sufferer for a time bankrupt, be spinal concussion, then we have in this class of cases "a multitude which no man can number" of railway spines! If mental depression, anxiety, irritability, vertigo, sensitiveness to light, palpitation, dyspnœa—symptoms which Oppenheim relates as associated with this disorder of the cord, and which are actually characteristic of most of the anæmics, neurasthenics and hysterics we

meet—are to be accepted as proofs of spinal concussion, the cord must be most easily and frequently concussed.

But, putting aside these many instances, in which physiological shock is a larger feature than is any mechanical injury, we have a much smaller class of patients in whom concussion of the spine has unquestionably occurred, and who suffer, in varying degrees, and in varying proportions of the cord, its sequelæ.

(5) What and where are the lesions in these cases? Where they are depends upon the general distribution or the definite localization of the injury to the cord or its appendages. What they are depends upon the severity and character of the shock by which the concussion has been produced. In some of these cases, gross and even microscopic lesions may not be discoverable at all, and yet, doubtless, they are there. In others, the symptoms, whether immediate or remote, are traceable to hemorrhages, either from the meningeal capillaries and veins, or from the slightest vessels of the cord itself. The symptoms in these instances are direct resultants of compression rather than of concussion. If slight extravasation has occurred, irritative effects may predominate. If larger vascular loss has been suffered, paralytic results may at once ensue.

In other and severer cases, actual lacerations of the substance of the cord have been observed. In some parts the cord is remarkably tolerant of slight contusions, in other regions, it is equally the reverse.

Again, we may recognize a further class, in whom the primary effects of the concussion have been expended upon the meninges, giving rise to inflammatory conditions, or upon the spinal nerves, near their points of issuance from the cord. In such cases, secondary results are dominant. Degenerative changes may, and doubtless do proceed along these nerve roots into the fibre columns of the cord, especially in the posterior tracts, whenever the ganglia of the posterior roots are involved.

When these lesions exist, we have to study them and their results precisely as we do similar conditions of idiopathic origin. The same evidences of localization may be traced as in the ordinary forms of spinal disease, and the condition must, accordingly, be regarded, not as one of spinal concussion, but as one of a variant group of lesions resultant upon that event, lesions which testify, by their sensory, tactile, thermal, motor, reflex or trophic consequences, to their location, their gravity and their extent.

And what, lastly, of the prognosis of so-called spinal concussion?

In estimating the final results of these injuries, precedent conditions, individual temperament, coincident disease, personal circumstances and the like, must all be taken into the account. Many writers upon this topic have pictured the plaintiff in a damage suit, recovering rapidly upon the receipt of a favorable verdict and a handsome recompense. Such patients often illustrate the fraudulency of their claims. And yet not necessarily is this conclusion just. The return of health in the neurotic is often stimulated by the features of their environment, and in so far as these are improved by their success in the courts, the award has its reflex influence toward recovery. Diminish as we may the list of railway spine sufferers, the outlook for a notable proportion, in whom the paralytic and trophic sequelæ of this injury have developed, is not good. From the exclusively irritative consequences of concussion, the majority, I believe, ultimately recover.

These, then, may be stated as well warranted conclusions:

(A) The term "spinal concussion" indicates a transient molecular disturbance of the cells of the cord. It is a misnomer as applied either to the actual sequelæ of such disturbance or to the many cases of nervous shock which, voluntarily or involuntarily, simulate railway spine.

(B) Actual concussion of the cord is not easily induced, and, probably, only by a direct violence.

(C) No consensus of symptoms can be declared which can justly be denominated spinal concussion or railway spine.

(D) Lesions of the cord, resultant from this cause, vary with the intensity, quality and seat of the injury. They are sometimes vascular, sometimes meningeal, and sometimes involve the actual substance of the white fibre column or the gray matter of the cord.

(E) Although these lesions are not always discoverable, their motor, sensory, trophic or reflex results often prove their existence and demonstrate their location.

(F) Eliminating the cases of pseudo-concussion, to which I have referred, and those in whom slighter irritative symptoms develop, the remainder should receive a very guarded prognosis, which must be dependent upon the extent and gravity of their paralytic disorders.

With the opinion, expressed by certain writers upon spinal concussion, that in all these graver cases neuroses preëxist and are simply emphasized by the injury, there is no scientific

ground for sympathy. The argument is speculative and far-fetched. It savors very strongly of the special plea of the corporation counsel in surgery.

TRAUMATIC NEUROSES.

W. A. JONES, M. D.

The term "traumatic neuroses" was originated by Putnam and Walton by their description of a group of symptoms. Oppenheim enlarged upon them and finally baptized them with the new name, and to the last mentioned gentleman we owe much or little as the case may be. It is certainly preferable to the old terms "spinal concussion," "brain concussion," "railway spine and brain," and as to the term "Erichsen's disease," it is to my mind without proper scientific foundation.

Gapen, of Omaha, has suggested that the so-called disease be dedicated to Erichsen, so that he bear the obloquy that it deserves.

No relationship can exist between the terms "spinal concussion" and "traumatic neuroses," for there is no group of symptoms symptomatic of spinal concussion alone, and the term deserves to be dropped, as it has already been, and the newer term, which emphasizes the ætiology, should take front rank, although this will be modified and changed in time.

If a man meets with a railroad or other accident and it is followed by nervous symptoms he is said to have had spinal or brain concussion. Whereas in reality he has an injury to the nervous system, a true traumatic neurosis, a term which explains itself. These neuroses may be of three general forms: First, neurasthenia; second, hysteria, and third organic disease, to say nothing of malingering, and if neurasthenia or hysteria does exist, it does not differ in the least from these diseases of non-traumatic origin. Unquestionably certain organic results may follow an accident, and various theories have been advanced to show how diseases functional or organic may originate, but it is not always scientific to apply a theory to the cases of injury without first inquiring into the previous condition of the patient. The statements of such patients cannot be absolutely relied upon. Disease may and often does exist before the injury, and yet the victim places this in the background, particularly as a possible plaster of wealth inspires him to date all symptoms from the accident. For instance, it is said that arterial scler-

osis is a possible effect of an injury. No one can positively dispute this, and yet most of us would doubt it and be inclined to believe that disease had previously existed. We ought to keep this point in mind, that disease may have been present, and it is to the interest of the injured to ignore its previous existence. Then, too, we are obliged to consider the self-study, the sympathy of friends, and the frequent suggestions dropped by relatives or solicitous attorneys, the repeated examinations by physicians who openly discuss the symptoms, and to the ever ready patient drop a hint of great importance. The majority of symptoms that are present are of the subjective type and it is impossible to place any great reliance upon them; it is even so with a great many so-called objective symptoms. The only procedure in such cases is to isolate them or put them under strict observation, so that all things can be carefully determined. The symptoms, according to Wichman, which are usually present and indicative of organic disease from an injury and to the exclusion of prior symptoms of disease before the injury, are immobility of the pupil, diplopia, atrophy of the optic nerve, marked muscular atrophy (not the atrophy of disease nor the natural differences that so often exist in the limbs), real bladder troubles (not hysterical nor malingering incontinence), foot or ankle clonus; this last symptom may exist in hysteria, but if it occurs in combination with the other symptoms enumerated it is indicative of nerve changes. Undoubtedly a great many cases of trauma produce their effects by fright and fear, a psychic condition wholly.

Charcot, Oppenheim, Meynert and Seguin all agree that the majority of cases are psychical, while a smaller number are due to a physical or direct bodily injury. The limitations of the field of vision are looked upon by Moebius as purely hysterical; the same can be said of sudden and transient deafness. Either psychical or physical injuries may cause vascular modifications and disturbances of cell action, which in turn may lead to organic disease.

Wichman believes that three conditions are present: First, a commotion of nerve elements; second, vaso-motor effects, and third, fright. In a number of cases the symptoms are one sided, and occasionally upon the same side as the injury. Presumably these are functional rather than organic. Meynert has theorized upon a neglected artery, the arteria choroidea, and thinks many symptoms can be attributed to alterations in this vessel as it is distrubuted to the hippo-campus major, corpus fimbriatum, choroid plexus and velum interpositum,

and his pupil, Kolioska, believes that its branches are further distributed to the internal capsule and optic tract, and to the middle horn of the lateral ventricle. If this were true, it would simplify the pathology of a great many neuroses, but the majority of observers believe that the primary effects of an injury are cellular or cortical and not from the deeper structure. Benedikt thinks that the neuroglia is loosened from around the blood vessels, thus allowing changes to take place in the lymphatic or peri-vascular spaces. Various forms of paralysis are often present. Anæsthesia is usually wide in area, and rarely are anæsthesia and paralysis confined to the distribution of a motor, sensory or special nerve, consequently they must be classed under the hysterical type, and self-study and auto-suggestion may produce almost any forms of disease which may closely simulate organic types, or such an array of subjective with a few misleading objective symptoms may lead us into an error of diagnosis that seems justifiable.

Rumpf has suggested three tests to determine the reliability of symptoms: one, pressure on painful points in true neuroses elevates the pulse rate; two, quantitative reduction of galvanic excitability of motor nerves; three, faradization of a nerve trunk, fascicular or fibrillary contraction of muscle is found to last some time after operation. These tests ought to be tried more fully to determine their value. Experiments upon animals show that great force is required to induce spinal disease. Considering the protection afforded to the spinal cord, it is just and reasonable to presume that blows or falls rarely induce disease of the cord. Schmaus, of Munich, in his experiments places a flat board over a rabbit's back and strikes with a hammer, and proves that only after great force or many continued blows are ill effects produced; on post mortem he has found rupture and degeneration of axis cylinders. In Germany malingering is of very rare occurrence; so Oppenheim claims, and in other countries less civilized than ours the malingerer is afraid to malinger. With us in America, this free country where railroads are worth money, and attorneys are well schooled by long experience as damage suit lawyers, the malingerer is in his element, and the general form of symptoms which were so graphically described by Erichsen and so carefully stated, made the term "spinal concussion" a name that struck terror to the defendant's attorneys, but now the new term supersedes the old, perhaps because it is broader, more expansive and mystery abounding.

The railroad victim or some of his friends know what comfort

can often be derived from a damage suit. They are infected by the prevailing epidemic to sue corporations. Their friends are always ready with sympathy, and if certain symptoms are absent, some one kindly supplies the deficiency. Suggestions seem imbibed from the surrounding atmosphere and soon the typical case is developed. Judd asks, "who is to blame" and the answer is difficult or the question remains unanswered.

How many cases of genuine traumatic neuroses exist, and what is the ultimate outlook for recovery? In the first place the number of true neuroses is small; more than 33 per cent. are hysterical; about 10 per cent. are malingerers and not more than 5 per cent. suffer from permanent disease. I think we can truly say that the hysterical type will recover. The neurasthenic may recover or at least improve; the organic even may improve, although usually hopeless. All should be properly compensated, but all should be under the supervision of a physician, and all should be. relieved of expense and that borne by the employer; and after a certain time proper claim should be paid unless the patient himself is liable.

Knapp, who does not believe to any great extent in the serious results of the ordinary railway accident, in which the trial for damages is an element, asks and defies physicians to show him such results in which the patient or his relatives were wholly to blame, and in which no claim for money is to be thought of. Certainly some one can bring forward such a case, and yet we rarely hear of it. From this fact alone I think that the vast majority of traumatic neuroses are of psychical origin developing into disease largely through suggestion, but if treated from the proper standpoint rapid recoveries should be the rule and not the exception. If more care were taken in fully determining the actual condition, we would find that too many were prompted to malinger, either from improper reasoning on their own part or the hypnotic influence of others.

Dana, of New York, reports the case of a man who developed a supposed neurosis from contact with an electric wire. He immediately became anæsthetic and paralyzed on one side of the body, and yet the wire was found to be an old "dead" wire. So much for a psychic effect. An instance occurred in our own state in which an employe of a railroad met with an accident and seemed to suffer great bodily injury; he was examined by physicians for the plaintiff and for the defense and all agreed that the man was permanently and seriously injured, and all advised the settlement of the case, but the defendant determined to fight on principle, and was so successful that

the case was thrown from the courts, much to the man's disgust, and he who had been so helpless and permanently (?) injured for over a year took up his bed and walked, and returned to his ordinary day labor much to the amazement of several medical gentlemen. Any number of instances might be cited to show that the psychic element has not received proper attention and has often led to much deception and misunderstanding. We cannot be too careful in determining the cause, the extent of the injury and the existence of previous disease, and we must also remember the influence of the mind on the production and cure of nervous phenomena. I believe that in a few instances, in those predisposed to nervous diseases, the psychic element may continue indefinitely, but I also believe that in the majority of cases under the proper influences it disappears and the patients recover completely. On the whole the prognosis in neuroses of traumatic origin is favorable. Cases of transitory paralysis are very frequent, but the outlook for recovery is good. Diabetes is often a temporary symptom and recoveries occur promptly.

Amnesia, says Seguin, is a symptom or condition which has been too much neglected. It frequently occurs, is usually functional in character, but may result from some vascular disease. Local or neural troubles occur as often as hysterical symptoms and may be the starting point in the development of an aggravated functional disorder, but the aggravation is usually due to undue sympathy or influence, self-study or auto-suggestion.

Seguin gives a scheme of classification which I take the liberty to introduce:

Injuries to the nervous system without evident gross lesions. Physical and psychical shock.	Immediate symptoms.	1. Transitory paralysis. 2. Diabetes (mellitus or insipidus). 3. Amnesia (total or partial).
	Late or secondary symptoms.	4. "Traumatic neuroses." (a) Psychic (depression or hypochondriasis). (b) Hysterical or neurasthenic. (c) Local or neural. 5. Paralytic and atrophic symptoms (sclerosis and progressive muscular atrophy); dementia paralytica; epilepsy. 6. Pott's disease of the spine; cerebral tumors. 7. Malingering.

SPINAL CONCUSSION IN ITS RELATION TO CHRONIC DISEASES OF THE SPINAL CORD.

LEO M. CRAFTS, B. L., M. D.

Since Erichsen, a surgeon, first called attention to the subject, this uncertain and indefinable term has been employed to designate a well-recognized class of cases whose symptoms date from some trauma, slight or of severer degree, including falls, blows or collisions on any part of the body, head, back, buttocks or extremities, but into which a large element of mental or nervous shock enters, and associated with which there is usually extreme fright or anxiety. Page, in later and more extended investigations arrived at widely differing conclusions from the first observer, claiming that the majority of the cases are functional with favorable outcome, and that true organic lesion is a rarity. The present view is largely, though not unanimously, in accord with his views. Certain writers, however, charge him with unfair minimizing of the gravity of the condition because he is the representative of a great railroad corporation.

Oppenheim discarded the ambiguous name, spinal concussion, and substitutes the term neuropsychoses, while the appellation of traumatic neuroses has met with most general favor. But none are satisfactory, or sufficiently comprehensive, since they do not embrace the occasional instances of organic disease which, though ever so rarely, still do occur. Edmund Andrews says: "Pure concussion, if it exist as a pathological state, may be defined as a stunned condition of the cord, which is assumed to have undergone some form of molecular derangement too slight to reveal itself in gross appearances," and Walton remarks that "as regards the term 'spinal concussion,' I have not yet seen a case in which I have felt justified in making this diagnosis."

Neither injury of the spine nor even of the head are essential to the production of the typical congeries of symptoms. A blow upon any remote part of the body may prove equally productive. Moreover, as has been cited by Walton and Dana, lesion of the spinal cord from trauma, without injury to its bony encasement, is scarcely conceivable; the cord being a small and light body suspended pendulous in a comparatively large canal, surrounded by fluid, areolar tissue and a plexus of veins, and sustained by ligaments, all within a firm, but flexible canal. Still farther, the spinous processes pointing downward, impact upon

them tends to tilt the vertebræ, thus diffusing and diverting the force of a blow instead of transmitting it directly.

That predominating class of functional cases, including traumatic hysteria, neurasthenia and hypochondria and the neuroses of allied character, fall beyond the scope of this paper, and will receive only such notice as is necessary to a lucid discussion and differentiation from those with a true pathological entity. In the consideration of this subject I shall regard all conditions which pass beyond the realm of the purely functional into that of the organic lesion, of whatever nature, as germain to the division of the topic with which this paper deals.

Charcot at first regarded all these cases as traumatic hysteria, losing sight of the fact that, although the dominant characteristics of this affection almost universally give the chief coloring to the clinical picture, this does not preclude the existence of an underlying pathological state. Oppenheim's earlier view was in strong contrast to that of Charcot. But his very thorough and conscientious researches have modified his former conclusions, and have led him to declare the condition a neurosis of traumatic origin.

Hodges has reported a series of twenty-one cases, with twelve recoveries, six with almost complete restoration and only three unimproved, while in thirty-three cases reported by Oppenheim, only four or five improved and the others are characterized as "stationary or progressively chronic."

The most recent and valuable contribution to the subject is an article by Dr. G. L. Walton,* with a comprehensive report of one hundred cases occurring in his own private and hospital practice. Of these, he finds eighty-two purely functional, exhibiting an inexhaustible category of subjective symptoms, including vertigo, deafness, tinnitus, tremor, muscular twitchings, paræsthesia, hyperæsthesia, sense of constriction, etc. He found thirty of these manifesting special loss of power, forty with numbness, tendon reflexes very active in thirty, while fifty-nine showed very frequent pulse. In only seventeen was there demonstrable organic lesion of any nature. Of these, two had sustained fracture, and one, dislocation of the vertebræ. One showed injury of the cervical nerve roots, two probable neuritis. One presented a previous spinal sclerosis, one infantile paralysis, another, choroiditis, and one had extensive atheroma. Four were sufferers from cardiac disease, one had cystitis of local origin and two were victims of phthisis. Only six with organic lesion sequent upon the trauma.

Upon one he remains in doubt as to diagnosis. A brakeman

who presented no irregularity of the back or other objective lesion, but showed an increased patellar reflex and a "pronounced and continuous ankle clonus on both sides." From this symptom, organic injury of the cord was concluded and the case settled for heavy damages. This was soon followed by complete recovery. Walton concludes: "Whether this was a case of hemorrhage about the cord with absorption, or an exceptional case of functional disorder or simulation, or whether some other explanation can be offered, this history would not alter the fact that as a rule a marked and continual clonus denotes organic injury of the cord."

The conclusions arrived at by different observers depend very largely upon the significance attached to the presence of different symptoms. Knapp regards tremor, sense of constriction about the waist, staggering gait and swaying with closed eyes as indicative of structural change. He also lays much stress upon impotence and claims of vesical disturbance, and increased patellar reflexes. He agrees with Wolff and Strumpell that most of these cases are incurable. In all of these signs there may be nothing of pathological value. All may occur in functional affections, in neurotic or debilitated states, or be assumed by the malingerer. A change in the deep reflexes alone, without other correlative signs is of no significance. The knee jerk may be very active or entirely absent in health, and conditions of an entirely functional nature may be responsible for its depression or exaltation, and even a continued ankle clonus is not pathognomonic of organic disease. No value attaches to a rapid pulse. Paræsthesia, anæsthesia or hyperæsthesia, or the loss of power is not significant. In Walton's cases, thirty complained of special loss of power and forty of numbness, but in none did the condition correspond to muscles or groups of muscles or to nerve distribution; neither was there any local atrophy or altered electrical reaction.

Various authors have noted in their cases that where the blow was received on the head, hemiplegic conditions developed notably on the same side of the body as the head injury. Oppenheim calls special attention to it and Erlenmeyer considers these equilateral paralyses as pathognomic of neurosis of traumatic origin. Charcot calls them "dynamic and psychical paralyses, very similar, to say the least, to hysterical paralysis." Careful study into the past history of the case is a necessity, and will ordinarily reveal some neuropathic tendency, and behind the present clinical picture will appear evidence of a previously more or less exhausted or degenerated brain and

nerve power; and various forms of suggestion play a large part, auto-suggestion, and the suggestions of solicitous friends, indiscreet physicians and officious attorneys. Nor are we justified in making a diagnosis of pathological lesion simply because we know that organic injuries are possible, when all the symptom group is accountable for on purely functional grounds; or unless we find such unmistakable signs as local atrophy, decubitus, coldness, rigidity, altered electrical reactions, fibrillary twitchings, true spastic gait, pupil irregularities or nystagmus, which have been very rare in the experience of Seguin,[1] Dana and Walton, and Osler[2] says: "So far as I know, no case with autopsy has been reported in this country, nor have I seen an instance in which the clinical features pointed to organic disease which had followed on a traumatic neurosis."

According to Dana [3] "Severe shock and blows to the trunk may lead to hemorrhages (usually meningeal) or excite a chronic myelitis, or lead to the development of degenerative processes." Andrews, whose views seem to lean rather toward more frequent organic lesions, says: "Not only are the local structural changes often the same in disease and in the results of traumatism, but secondary effects in remote organs are frequently identical. * * * In at least one affection, tabes dorsalis, there is evidence that idiopathic and traumatic cases may be identical in kind." Petit agrees with this view. Hamilton also thinks railway concussion may cause locomotor ataxia, and Westphall believes that disseminated sclerosis may be set up by the jarring, possibly from punctate hemorrhages, and Zenner makes a similar statement. That intra-spinal hemorrhage does occur there is no doubt. One necropsy is recorded which on careful section of the cord disclosed a single, small, globular clot in the canal of the cord that, by pressure, had proved fatal. The hemorrhages may be extra dural, and three-fourths of all such cases are said to be of this variety, or from laceration of the meningo-rachidian veins, the blood being poured out in the space of the arachnoid, or it may be punctate, scattered through the substance of the cord. Where it is extra dural, the results are usually merely thickenings, adhesions and pigmentations locally. A case is reported which, on autopsy, showed a marked pachymeningitis. In the other two varieties the disturbance may be profound with destroyed function, or may result in inflammatory or degenerative processes, or death from pressure, or there may be resolution and complete restoration. Brown-Sequard says hemorrhage in the cord is accompanied by gradually diminished sensation with-

out convulsions. When around the cord it compresses the nerve roots and gives convulsions. Walton has observed both of these varieties, describing two cases presenting atrophic paralysis and reaction of degeneration of arm muscles, and one with spastic condition of the corresponding leg, and another with spastic gait and clonus. Osler cites a series of autopsies on victims of a railway wreck in France, in which minute hemorrhages were found in the substance of the cord. Injury to the vertebræ, intervertebral discs, or the ligaments, may excite a meningitis, usually local and sub-acute, or chronic, although it may be acute and general or purulent and quickly fatal. Andrews describes a striking case which, following a blow on the back, rapidly developed complete paraplegia and spasms rapidly fatal. Post mortem revealed a softened and inflamed condition of the posterior columns in the lumbar region.

Bernhardt's case of spinal tumor stands alone. The case of general paralysis reported by the same author, the patient having made a good recovery from the accident and not showing the type of the general paralytic for eleven years, gives grave doubts as to sequence. Our knowledge of the insidious nature and course of the progressive degenerative and sclerotic conditions should make us very cautious in accepting trauma as an ætiological factor.

Of the occurrence of chronic myelitis Putzel says: "In traumatic cases, a single traumatism may set up an inflammation of the cord which does not make its appearance till long after the symptoms of the original disease have subsided. * * * Months later signs of slowly advancing myelitis made their appearance." But the connection with the original trauma in any causative relation is certainly very problematical, and the likelihood of the presence of previous specific disease is not to be overlooked. Spinal irritation, a condition not to be confounded with true degenerative or inflammatory processes, is undoubtedly due, in some cases, to the mental shock and fright from blows or falls; or to the severe bending and twisting to which the spinal column may be subjected in accidents.

The occurrence of optic atrophy following concussive accidents has been cited by several observers. Oppenheim, Wolf and Knapp all speak of concentric limitation of the field of vision and atrophy of the optic nerve having been observed in a few cases. Andrews attempts the only explanation that I have been able to find. "Impairment of vision," he says, "does occur in slight injuries of the cord, probably due to simple atrophy of the optic nerve and hyperæmia of the disc."

Walton observes that "there can be no doubt that atrophy of the optic nerve may follow simple concussion," and Osler includes the same condition as one of the chief features indicative of the presence of central organic disease. In this connection the case of a man who had a chisel driven several inches into the back, partially severing the spinal cord, is of interest. When the chisel was withdrawn, the patient saw vivid flashes of light followed by darkness. Here is a condition which, it seems to me, has not received sufficient study, nor any adequate explanation. By what paths of communication is this connection between the cord and the optic nerve? Spinal concussion not being regarded as tenable ætiologically, how does optic atrophy occur? If simple concussion may produce this —a genuine pathological process in the optic nerve—why may it not be equally a cause of structural change in the central nervous system? Either the atrophy is not due to the concussion, or the concussion *per se* may cause organic change. In the same category belong those cases which develop paraplegia and death with no demonstrable lesion found at autopsy, but upon which we will not here venture to theorize.

Clevenger's views as expressed in his work have met with little favor. Undoubtedly he holds a much more frequent occurrence of organic disease than present research warrants. But his theory of the sympathetic ganglia as the starting-point of the disturbances is worthy of more attention. That derangement of the sympathetic system is attended by alterations in the vascular supply is well recognized, e. g., in connection with enlarged, inferior turbinates in the ætiology of aural disease. It is certainly within the range of fair hypothesis that derangement of the vaso-motor supply of the vessels of the cord and brain, through the sympathetic centres may be responsible for many of the functional states, and also the ground-work for the rare organic lesions. Pershing[4] refers to autopsies that showed only dilatation and degeneration of the small vessels. Osler, in speaking of Bernhardt's case of multiple sclerosis adds that "advanced arterio-sclerosis was present, and also refers to another that presented the same condition, "particularly of the brain and cord, and in the latter areas of degeneration in the white substance, and degeneration of the sympathetic ganglia." And Andrews explains the occurrence of priapism as possibly due to paralysis of the sympathetic fibres in the cord. More extended investigation may reveal a larger place for the sympathetic in the ætiology both of functional and organic cases.

In conclusion, then, it may be said that pathological changes

in the cord from concussive accidents with resulting organic diseases, are rare. Great force must have been applied to the spine, entailing usually the complication of fracture or dislocation of the vertebræ, injury to the intravertebral discs, or stretching or rupture of the vertebral ligaments; for, if molecular change is inadmissible, injury to the cord substance is hard to conceive so long as the osseous structure remains uninjured. The theory of spinal concussion is largely abandoned, and recent writers are agreed in its extreme rarity as a lesion and cause of chronic organic disease, although it is established that in rare instances, "traumatism may cause hemorrhage, inflammation, softening, or may start up degenerative processes."

*The Traumatic Neuroses (A reprint), G. L. Walton, M. D.

[1]Sajous' Annual, 1889.. iii, 2.

[2]Practice of Medicine. Vol VI.

[3]Reference Handbook of the Medical Sciences.

[4]Alienist & Neurologist, January, 1882.

DISCUSSION.

Dr. MILLARD: I am hardly prepared to discuss these papers, and in fact I do not know that I am expected to say anything inasmuch as I belong in the field of surgery. I am of the opinion that my paper of last year has had something to do with the symposium to-night. I expressed my views upon this subject a year ago in the paper that I read at that time. In listening to these papers to-night, and the various pathological opinions expressed in them, I am reminded of the fact that the recent statements of Judge Story, of New York, the eminent jurist, are perhaps quite true. The statements were to the effect that there are three classes of unreliable witnesses, and they were respectively classified as the liar, the blanked liar and the medical expert. I am further reminded that this subject is not an exact subject, neither is the field of neurology an exact science. A lawyer came into my office and named a book that he wanted, saying: "Doctor, I am on the other side now, and I want the other book, and my friend told me that I could find in MILLARD'S library works that treated upon both sides of the question. Now, I represented the corporation in that other lawsuit, and I wanted the book that treated on this subject in a way favorable to that side. Now I want the book that takes the side directly opposite to the one which I borrowed of you in the other case." I took down the book and he said: "This is the book I want." Now, I mean no reflection upon my friend

and I meant to make no unjust criticisms of the neurologists in my paper of a year ago, but I did mean all that I said. I was discussing this great subject at that time from a medico-legal standpoint, and I appealed to the profession to be more exact, to make things more tangible, and give us less conflicting pathology than we have at the present time. It is a fact that thirty-five millions of dollars have been wrung from the treasuries of the railway corporations alone, as the result of medical expert testimony upon this subject of spinal concussion and the so-called lesions. Now, there is no doubt but that we have run wild upon the subject of railway spine. There is no doubt that great harm to the corporations, from a financial standpoint, has resulted. At the same time I want you to distinctly understand that my sympathy is with the poor man that is injured. Notwithstanding the fact that I represent some of the corporations, and appear very frequently for them, I appear still more frequently as an expert in the interest of the plaintiff. At the same time I demand, as I did in my paper of a year ago, that we be more cautious and exact and definite upon the objective symptoms than we have been in the past, that we rely more upon them than we have. The effect of our past action has been to injure the profession as a whole. I am always ready to fight for the medical profession, and always shall be ready to fight for it, but at the same time, what I said of the neurologists a year ago applies very largely to the medical profession as a whole. We are not the followers of an exact science. There are many things yet to be discovered in the practice of medicine. This being the case, we should be particularly careful when we appear in court as medical experts. So far as my views upon the pathology of spinal injuries are concerned, I am, as you know, conservative. I believe that traumatic changes following the so-called concussion are extremely rare, if they occur at all. I understand that the term concussion means simply a temporary arrest of the normal changes of the cord. I do not believe that pathological changes are bound to occur following so-called concussion. It is true that surgeons use the term concussion as quite synonymous with that of contusion. I believe that when we get the lesions following concussion, that in those cases we have had more than a concussion. We have at this time a contusion. I believe that something tangible could be found were we able to get at the part and examine it with the microscope. I think there would be a minute hemorrhage that was alluded to in the paper by Dr. SWEENEY, but I do not believe that myelitis occurs frequently, following the simple temporary ar-

rest of the normal functions of the cell life of the cord. I believe that when you get myelitis following these injuries, that at the time or shortly thereafter there has been a lesion which has resulted directly from the injury. From this lesion we get an extension, with the usual result of inflammatory degeneration.

Dr. SWEENEY: I believe that the humorous account Dr. MILLARD has given us of the lawyer who came into his office and wanted "the book on the other side," explains the reason why medical expert testimony is so often in conflict. I do not believe that any physician who goes upon the witness stand, goes there with a previously existing prejudice in favor of one side or the other; and I believe that most of the opprobium cast upon the profession in this direction is not deserved. I believe that in the majority of cases the honest and honorable physician, although knowing the whole truth, is permitted to tell only that part of it which suits the lawyer on one side or the other. I do not believe that the trouble lies so much with the medical profession as it does with the members of the bar, and I think we ought to throw the opprobium where it belongs. My ideas in regard to "spinal concussion" are very fixed. I do not believe in spinal concussion as such. I do not believe that it is possible to concuss the spinal cord, surrounded as it is by ligaments and attached and protected as it is, but I do believe in cerebral concussion, in a disturbance of those cells of the brain which control the vaso-motor nerves, and which affect the vessels through paralysis, and that following that there isa persistent and chronic condition of vascular hyperæmia which exists just as long as the psychical condition of the brain exisst. I think it is not only possible but probable that in the majority of cases, that where the congestion is long continued from reflex and psychical pertubation, injury exists and anatomical changes will follow. But so far as "spinal" concussion is concerned I consider the word spinal entirely unnecessary.

Dr. TOMLINSON: I have been very much interested in the papers that have been read. I have been especially interested in Dr. MILLARD'S remarks. I think the difficulty lies in the fact that, in the discussion of this subject, we begin not at the bottom but in the middle to discuss it. It is quite evident to all those who are familiar with modern work and progress in neurology, that there is quite a consensus of opinion that pathology will only explain so much of the phenomena of diseased cerebro-spinal function, and that along with the study of biology, chemical biology, and the application of biology to the

study of disease in general, there has gone a marked tendency to use biology and physiology in the study of nervous diseases rather than pathology, as we see it, under the microscope. Now it may be transcendental, but it seems to me there is a theory —it is only a theory, a hypothesis—that will explain these conditions. I believe, as Dr. SWEENEY has just stated, that the origin is not in the spine, but in the cortex. You know that the tendency in growth, as for instance in plant life, is largely peripheral, and that the cells which form the peripheral ends of the leaves and branches and the cells which form the peripheral parts of the buds, are more unstable in their make-up than are the more fixed cells. In other words, the tendency of the formation is like the tendency of the function, that is, that which persists becomes uniform. It evolves from the simple to the more complex, from the lowly organized to the highly organized. The outer layer of cells in the cortex represents the unstable formation. We all know that the chemical make-up of the protoplasmic cells is particularly unstable. We are all familiar with the influence which incident forces have in changing chemical compounds, and those forces have the same effect in changing the highly organized compounds. We know they possess a marked tendency to be easily decomposed by simple incident forces. Now some experiments have been recently made upon animals with regard to the influence of concussion on the cortex. It has been found that the compounded elements of the cells have been broken up, and the attraction of the component parts so lessened that the cell is destroyed. The nucleus is destroyed and the cell is not reconstituted. With this knowledge, and knowing that the functional power of the brain, and of the cortex especially, is due to the chemical changes going on in the matter of which it is made, we can readily understand that when an incident force sufficiently strong acts upon this mass, and more especially where this cortical mass has imperfections due to one or more of the causes which are referred to in my paper, there is going to result a transformation which will create considerable deficiency. In cases where this is present there may be a permanent destruction of some of the parts or permanent loss of function of some of the parts. If the effect has been more or less great the result will follow that they will persist and become permanent, and we have a disorganized and indefinite and non-uniform state of cerebral activity rather than a normal one. In the persistence of this we have the manifestations which have been called by these various names. Now I think in discussing the pathology of these diseases, we should

not stop in the middle, but should go deeper into the vital processes involved in the physiology and biology of the nervous system, as representing the most unstable of all the organized compounds. Again, in regard to what we know and speak of as the irritability of nervous tissues. What is it? I believe it has a chemical explanation. Irritability is the characteristic of all organized cells. We know that all nerve cells, in common with other organized cells, are unstable in their chemical composition. We know that when the chemical decomposition takes place, it is the result of the action of forces coming in contact with the different compounds, the more unstable being broken up by the more stable, and the tendency being toward a re-constitution of the different compounds. Therefore the irritability of the nerve cells, from a chemical standpoint, means the energy which is generated as the result of the decomposition of the chemical mass which we call protoplasm; that the degree of irritability which is normal in the individual is governed by the operation of his organs of nutrition, and although that irritability may be and is increased by an imperfection in the same, that simply means that the compound is more unstable, and consequently a slighter incident force will disorganize it. In inorganic chemistry we have such compounds, as for instance, nitroglycerine, in which a very slight incident force brings about decomposition. We have like conditions in the nervous cells, where a like incident force of slight character brings about decomposition with a plentiful discharge of energy. Now, although there are not absolute facts to explain this, it is my firm belief that the time will come when this will be recognized as the real explanation of organic activity, and that the normal manifestation of function will be the basis upon which we are called to make our future discussions in regard to the perverted functions which are characteristic of the different nervous diseases we are called upon to treat.

Dr. ANDREWS: I have little to say upon the subject, as it seems to me it has already been very exhaustively treated. I agree with Dr. SWEENEY that the medical expert is too much abused, and I think one reason why he is abused, and perhaps deserves abuse, is that he tries to be too definite on the witness stand as to the pathology of the case. All physicians must and do admit that very slight injuries will produce disturbance of the nervous system, whether that injury be such as to cause traumatic neurosis, spinal concussion or concussion of the brain or whatever you call it. I think we all agree that there are disturbances of the nervous system which exist and which persist

in their course and are permanent. I think we agree that the injured party deserves a recompense from the corporation. I have in my mind now a case in which I was recently consulted. The patient was the daughter of a railway surgeon, and last winter while sitting in a sleeping car was injured by one of the hot water pipes bursting and producing a concussion. Perhaps some of you have already seen the case. A piece of iron just touched the scalp, making a little scalp wound. The young lady remarked to a doctor a few minutes after that she was not hurt very much, and rode home a distance of fifty miles, walked from the depot to her residence, made her toilet after getting home, and told her mother about the accident, stating that she was not hurt very much. In a few days she began to complain of headache, and soon developed those symptoms which follow so-called spinal concussion. To-day that young lady cannot walk, not because she has a suit pending or because there is any prospect of a suit being brought, but because there is a positive disease of the nervous system in her case. Now, whether it be a spinal concussion or concussion of the brain, or neurosis or traumatic neurosis—call it by whatever name you may—there is an injury. In regard to expert testimony, I think we are frequently too anxious while upon the witness stand to prove that the case under consideration is one of spinal concussion. I am somewhat inclined to disagree with Dr. SWEENEY as to the existence of spinal concussion. I believe that sometimes it may exist and does exist, but I think it is very frequently diagnosed when it does not exist. I believe we should instruct our attorneys not to place so much stress upon this railway spine, this concussion of the spine, and try to make, as they do oftentimes, all the other evidence bend to this concussion. If we simply try to prove that there is an injury to the nervous system, it matters not to the jury whether it is a spinal concussion or traumatic neurosis or what name we may call it. Again, I do not like to see so much abuse heaped upon medical experts. Even the papers all over the country are abusing medical expert witnesses. I believe and hope that the time is coming when the medical expert witness will not be employed by either side, but will be appointed by the judge, and I believe when that time comes that there will be as great a compensation for damage done in the matter of personal injury as there is now. I know there are some frauds, but I also know that there are many genuine cases of personal injury. I am very glad to have heard this discussion to-night and to have been able to listen to these papers.

Dr. RIGGS: There is one phase of this subject that has not

been discussed this evening. We have a number of eminent oculists here, and I would like to hear from them with reference to spinal concussion and its influence in producing serious disease of the eye. That is a mooted point and one that is attracting a good deal of attention in our journals.

Dr. MILLARD: I intend to move that this symposium be put in the form of a reprint, and I sincerely hope that the ophthalmologists will be heard from. I feel as though the papers had been very exhaustive, and very ably presented. They will contain the literature upon this subject both pro and con., as it stands at the present time. I do not think there has been any feature left out.

Dr. FULTON: My ideas upon this subject have always been confused, and since I have listened to these papers I must confess that they are in an absolutely chaotic condition. The papers have been extremely exhaustive, and the predominant eye symptoms have been brought out by the papers and referred to by the different authors this evening, being accurately and truthfully described. I am fully impressed with the idea that most of the eye symptoms met with can be traced to a definite organic lesion. When they cannot be so traced they have been found in individuals who have been hysterical, who have had hysteria before the accident occurred. With regard to medical testimony, no subject has been brought up that has brought our profession into such disrepute and has led to such a total lack of confidence, not only on the part of the laity but also on the part of the other professions, as this subject upon which these papers have been read to-night. Now let us refer, without going into the subject in detail, because the hour is late and it cannot be done, to the relationship of the diseases of the eye to the spine. I spend at least two hours every meeting in trying to explain that relationship, but I shall not attempt to do that to-night. Let us take up a few of the symptoms. Beginning with atrophy of the optic nerve. I have never seen that follow any disease of the spine or head but what there were other symptoms with it, and when it does occur, *per se*, you usually find that there were symptoms of it before the accident. Of course it occurs frequently as the direct result of the accident, associated with other symptoms. It is frequently caused by hemorrhage, or some lesion of the optic nerve itself. It is frequently due to fracture, although the blow may be remote from that part of the head. Next come the various groups of paralysis. The paralysis of the various groups of muscles is frequently met with, and of course points to a definite lesion at some place. Now

all of those symptoms may be functional, so to speak, but they get well, and get well quickly. The great mistake we make in going into court in this class of cases is in giving such an extremely unfavorable prognosis. In a case where we cannot trace the symptoms to a definite lesion, I think we are justified in giving a favorable prognosis and saying that the case will probably get well.

Dr. BEARD: It seems to me that one thing must be apparent to all of us who have listened to these papers to-night, a point which has already been referred to by two of the gentlemen who have read papers. The most of us who have discussed this question do not refer to spinal concussion at all. We have had a symposium upon spinal concussion, and at least four of the writers have referred to symptoms which have no business here, so far as I can see. The neurasthenia and the hysteria which Dr. RIGGS has pictured to us come very properly under the head of what is called psychical shock, a peculiar cerebral result of a cerebral concussion. The symptoms of cerebral concussion are those which underlie the traumatic neuroses to which Dr. RIGGS has referred, rather than the symptoms of spinal concussion. And, as Dr. SWEENEY has acknowledged, the forms of myelitis which follow these injuries are often the result of hyperæmia caused by motor disturbance in the medulla or in the higher centres of the brain, rather than of any disturbance, *per se*, in the cord itself. All the inflammatory conditions which he finds related as secondary results to such injury are the result of traumatism to the appendages of the cord or the musculature of the spine, and are not the result of injuries to the cord itself. So much with reference to this association, close as it necessarily must be, between cerebral and spinal concussions. I think it simply goes to emphasize still further the point that I endeavored to make as strong as possible in my own paper, that there is a small minority of cases that can properly be called spinal concussion, and a very small group of symptoms that are referable to this supposed injury.

I want to say just one word in regard to the criticisms that have been made upon medical experts and, particularly, upon neurological experts. The demand is that the science of neurology and the science of medicine, as a whole, should be more exact; and yet, as some of us have said to-night, the trouble is that we try to be too exact. In our positiveness lies our weakness. That which is going to make the sciences of medicine and neurology exact sciences, is our very differences of opinion. It is only by the attrition of conflicting ideas that any progress

has ever been made in the scientific field, and to say that we must have an exactitude which shall enable us to express positive opinions upon the witness stand is to cultivate a vice rather than a virtue. This cry against the medical expert, which we hear all over the country and which we meet with at the bar, and which we ourselves sometimes reiterate, is simply another form of the old popular saw that doctors differ. Of course they differ, of course they ought to differ and only in their differences do they make any progress.

It seems to me that in demanding that we shall show the lesions that represent the results of these spinal injuries, we err in misunderstanding what a lesion is. When a muscular fibre contracts we can see that it changes form. That is a gross effect compared with those molecular changes which are the concurrent disturbances of the tissue itself, as the result of its contraction, and which are only discoverable when you come to put this tissue under a microscope. And when you put those very microscopic observations, which enlighten us as to the contraction of the muscle, side by side with the observations which we have to make with reference to nerve cells, the microscopic results themselves are gross. But when, as Dr. TOMLINSON states, you make comparison of these results with physiological methods and biological methods, then you arrive at what true neurological lesions are. If we are to regard only those lesions which we can see with the naked eye, or with the microscope, then we shall be compelled to limit the field of organic disturbance of the nervous system to a very small range. It is true that a great many nervous diseases are dependent upon changes in the nerve cells which no microscope can determine.

Dr. W. A. JONES: I was very glad to hear Dr. TOMLINSON upon the pathology of railway injuries to the spine, for I think it emphasizes the fact that a large majority of the diseases which follow injury of any character are largely psychical, and that the physical injury is of very small importance. It seems to me that some changes that take place in the cell elements of the cortex, either by fright or sudden impression conveyed to the patient, either awake or asleep, produce a psychic effect upon the nervous system which may result in any number or any sort of change. I believe that I would adhere more strongly to my original position, that the vast majority of these cases are of purely psychical origin, and that only in a very few do we have those changes which produce true organic disease. Very few cases are recorded in which post mortems have been made upon the sufferers from so-called railway injuries, and those few often lead one to suppose

that the disease preëxisted, or had begun, and perhaps the injury coming afterwards was the exciting element which simply advanced and accelerated the progress of the disease. I am glad to hear so much expressed about the term spinal concussion, and I hope some other term can be devised to take its place. I think the attorneys are learning very rapidly that we ought to discard the term and adopt something more tangible in its place. It is entirely out of order in this discussion, but I want to say a word about the medical expert. The greatest trouble with the medical expert is that we do not consult together and examine our patients together, and arrive at some definite conclusion. I do not mean by that that we shall all agree, for I should be very sorry to go into such a consultation and have every man agree, unless the case was very simple and easily demonstrated. But I believe that our differences ought to be honest, and that we ought not to strain a point to decide for one side or the other, as I believe we so often do at the present time. The great difficulty is not altogether with the attorney, but much of it lies with the medical man himself, and I believe that only by concerted action can this difficulty be surmounted. Dr. ANDREWS has suggested that the time will come when the court will appoint the expert. The time may come when that will be done, but I do not think it will be any advantage over the present method, for I do not see how it can be. The judge will be partial to some medical man, or some medical man, through his influence, will procure the position and will be as unfair as we are to-day. I was somewhat astounded at Dr. MILLARD'S statement, that the medical experts are responsible for the withdrawal of thirty-five million dollars from the treasuries of the railroads, and I do not believe it. In my own little experience in giving expert testimony, I can see how the majority of cases were decided, not upon my evidence, but upon some legal point or technicality. The expert's opinion, as far as the case was concerned, was absolutely worthless, and the jury was simply obliged to decide upon some legal point. Consequently the lawyer and the jury are responsible for the abstraction of the thirty-five millions of dollars. I want to refer to the case that Dr. ANDREWS gave as an illustration, in which the young lady received a trifling injury and which was subsequently followed by other symptoms which indicated disease. It seems to me that that case was purely one of fright and self study, and not due to any accident or injury at the time. I think we are sometimes too positive in giving our evidence in the way that Dr. BEARD has suggested, for I recall a case now—and I think Dr. ANDREWS will recall the same

case—in which a man was injured on a railroad train and made a prompt and fair recovery, remaining perfectly well for four years. During the fifth year he devoloped very serious symptoms which were afterwards found to be due to an injury to the skull, and the trouble has become permanent. We cannot always say that such and such cases will recover, but it is fair to presume that cases in which fright is the predominant element ought to recover promptly.

Dr. MILLARD: Before making the motion I referred to, I wish to correct one point that I brought out in my paper. It is this, that there should be a more distinct line drawn between the psychical features of disease and the physical ones. I believe that the psychical features are more liable to be permanent than the physical. In fact, I believe that they are recognized as an injury in a vast majority of these cases. I do not believe that the psychical features are as transitory as the physical features. The person who is frightened at the time of a fire or one tipped out of a boat into a river may never recover from that feature alone. It leaves a lasting impression with them that they never forget. I do not believe, however, that that feature is an element in the production of any organic lesion. In regard to Dr. JONES' point, pertaining to expert evidence, I do not agree with him in the least. I believe that when the time comes, and I sincerely believe it will come in the near future, that the judges appoint the experts, we will have less differences of opinion than at present. I believe the case will go before the jury from the jury of experts. I am forcibly reminded of this fact by the recollection of a recent visit to the Minnesota State Prison. When at the prison recently, the first party that I happened to encounter that I knew, was a murderer whom I remember spending an entire Sunday forenoon in examining in behalf of the defendant's attorney, and arriving candidly at the conclusion that I did not believe the man to be insane. His attorney came to me and wanted I should appear, and I told him distinctly that I would not. That attorney had no trouble in finding somebody who was willing to swear that he believed the man was insane at the time he committed the act. One of the next persons that I met, in whom I was interested from the standpoint of a medical expert, was the famous Clara Blatz. Dr. RIGGS and I will never forget her piercing eye as she turned it full upon us when we both stated before the jury that we did not believe sh was insane. She was the first female prisoner I met at Stillwater. I remember shaking hands with her and we had some conversation together, and by the way she talked I am still con-

vinced of the fact that she was not insane. Now, if we have the judges appoint the experts we will not have these conflicting opinions among medical men, and we will not injure ourselves in the eyes of the public as we do at present. For that reason alone, if for no other, I sincerely hope that the time will come when we will have a law permitting the judges to appoint experts in all cases, at least in cases of criminal origin. I intend at the coming session of the legislature, to introduce a bill which I have already drafted, and which will in part, at least, change the present situation of affairs. At this time I move that the gentlemen be requested to furnish a reprint of the symposium together with the debate, for the benefit of the profession of the Northwest. I think they have covered this subject very ably indeed, and that it will be of very great advantage to the entire profession to have it printed together.

Dr. FULTON: I second the motion, and suppose the doctor means that not only the original papers as read, but the discussion also, should be included in that reprint.

Dr. MILLARD: That is what I meant when I offered my motion.

Motion carried.

Dr. ANDREWS: I do not want to be misunderstood in my remark that referred to medical expert testimony. Of course it is right and proper that physicians should be as exact as possible in their discussions with one another, and in their pathological views. My remarks refer only to what the physician says when he is acting as an expert witness. It was only yesterday that I was called as an expert in a case where the matter of spinal concussion came up. The physicians on behalf of the plaintiff testified that the patient was suffering from spinal concussion, and attempted to prove it. I was obliged to testify that I did not believe there was any spinal concussion present. I very frankly admitted, although called by the defense, that the patient was suffering with a nervous disease, which would probably be permanent. I felt that that was sufficient to place before the jury, and that it was nonsense for the the physicians present to wrangle over the matter of spinal concussion.

Dr. RIGGS: Before this discussion is closed I wish to state in a very few words my opinion upon this subject. In the first place I believe that the spinal cord can be concussed. There is plenty of evidence on record to show this; cases in which microscopic examinations after death revealed no signs of any lesions. In the second place I do not regard neurasthenia as psychical. It is very evident to anybody who has given the

slightest attention to nervous troubles, that hysteria is purely psychical. There is no question that there are many manifestations occurring as results of trauma that are psychical and purely hysterical. These have been thoroughly discussed this evening. There is no question but that the greater number of the functional perversions arising from trauma are the result of neurasthenia. There are a great many results that are due to organic diseases, and the only way that a person will ever be able to handle this subject is, not to be a devotee of Page or Erichsen or Clevinger, but to be so conversant with the anatomy and the physiology of the spinal cord, and the newer psychology which is now being so carefully studied by all advanced thinkers, as to be able to make out in any individual case the character of the phenomena you have to deal with. I feel that I would be doing myself a great injustice if I did not express to the gentlemen who have so kindly assisted me in the preparation of this symposium, my heartfelt thanks. I am extremely grateful, as we all are, for the kindness and patience with which the surgeons and general practitioners have listened to our dissertation which has lasted over two hours and a half.

SURGERY.

F. A. DUNSMOOR, M. D., CHAIRMAN.

SUCCESSFUL SURGERY.

The great reduction in the mortality in surgical operations during the last decade is due to the adoption of the germ theory, and to the fact that there are more experts (and by expert, I mean those who know by touch, sight and location healthy or diseased tissue; when to tear and when to cut, and are competent to face any hemorrhage; who realize what shock means, and who say *no* to the petitions for the impossible operation). We are also indebted to the better appliances of the present day, and to the greater cleanliness, which is next to Godliness—in surgery, next in advance.

It has been suggested by many that the wonderful success of Tait abroad and Price in Philadelphia impair the value of the germ theory. This reasoning is fallacious; would any practical man declare it to be unnecessary or foolish to lock the door until the night the burglar attempts an entrance. We are not all mind-readers, we *keep* the key turned that the protection may be sure. It is absolutely certain that if no germs of disease are about it is needless to use germicides in any operation.

To grow corn, corn must be planted, when nothing but corn will be produced. Pus will never appear in a wound unless there has been exposure to a pus-producing germ, but where there has been such exposure it is as certain to follow as if the patient had been vaccinated.

The germicide is, *per se*, of no advantage to any clean wound, nature alone supplying every requisite for healing and union, and making astounding cures when allowed by non-interference. It is protection for home industry "out McKinleying McKinley." If the surgeon, assistants, dressings, sponges and patient have about them *no* contagious products it is hardly necessary to try to kill bacteria which may be miles away; but woe to him who relies on this exemption where there may be a possibility of contagion; ill consequences await the most ingenious operator without the competent germicide.

Again it is argued that the great majority of our experts in the vast domain of surgery, using complete antiseptic precaution

fail in producing as good results as Dr. Tait or Dr. Price. This must not detract from the value of the antiseptic precaution, for if *anything* be proven in surgery it is that the reproduction of disease, or infection is accomplished by transplanting bacteria; but it is due to other causes, the greatest being the lack of personal ability, mental power and dexterous facility combined with the confidence of the patient, begotten perhaps by the wondrous record and reputation of the operator.

The surgeon may have prepared for every onset of bacteria, but if he be himself incompetent, neither saltpetre nor bichloride of mercury will save him nor his patient from disaster.

The famous operators who get on without germicides, are more particular as to surrounding influences, such as time, place, barometer, filth, fear, hope, assistants, etc., etc.

There are so many risks likely to be overlooked when we let the great light of antiseptic relief satisfy our anxiety, that one must be a great general who meets and successfully combats them all. That time is never wasted which is spent in watching and studying the preparation, manipulation and management, both before and after the operation of a man of vast experience. We should consider that man as good a seaman who avoided a shoal, as one who piloted his boat through it.

It is vastly better to steer clear of complications than to fight them. Courting the patient's confidence is our best evidence of gallantry. Agreeing with superstitious victims as to Fridays and fatal anniversies, and changing conflicting dates is not weakness but strength; better and easier is it than trying at this period to inculcate in their minds the idea of a higher education.

At an imperative operation the omission to quote to the patient favorable statistics is a blunder, and in contrast to padded results tabled for our own delusion by would-be surgical bombasts.

Experience proves the danger of operating while the barometer is lowering.

Personally I am satisfied that the morning hour is the best for the operation, although advices from abroad make it afternoon.

The empty stomach, the night's rest, and especially the waxing resources of the day, which are so much greater than those of the night, commend it to me.

Next to the patient's confidence one's own is of value. The timid operator who delays, who is incomplete (danger lies in what we leave; not what we remove), who continually relies

upon associates, upon repeated last looks, like lover's last good byes, who doubts about drainage, etc., etc., immensely damages the successes under contemplation.

We believe it to be far better to have one's own assistant for all operations, and that all compliments, consultations and divisions of responsibility should be made beforehand.

It is necessary first to be a' man before one can be a surgeon.

The qualifications of the first are multiple enough, and the standard must be to the individual himself. satisfactory, but of the latter's equipment, considering what he has to meet, no knowledge should be considered too trivial, no dexterity or excellence too great to be obtained.

We deprecate undue haste, but unquestionably the patient is in constant and increasing danger while depressed by anæsthetics, from the necessary or unnecessary exposure, the lowering temperature from the rapid evaporation from the body's surface, by reason of irrigation and damp covering, and the constant sanguinary depletion, great or little.

The time of such exposure and irrigation of the divided sensory filaments should be shortened as far as possible by the strenuous cultivation of expert manipulation.

As to the question of which precaution may be dropped, the best preparation for success is to employ every one that you would require were you yourself the patient.

And after all is said and done, when one is fully prepared to insure constant success in surgery, we believe he is one of the most learned men on earth, and his life and work too valuable to be spent on anything else.

TREATMENT OF TUBERCULOUS BONE AND JOINT DISEASE BY INJECTION OF IODOFORM EMULSION.

KNUT HOEGH, M. D.

A very great percentage of all diseases in the human species is due to the invasion of the tubercle bacillus, and no inconsiderable number to its lodgment in or near joints. Tuberculous joint disease is therefore so common that every general practitioner must be prepared to meet with it; its protracted course demands long surgical attendance, and its treatment forms thus one of the most important duties of the practitioner. It is evident that every addition to our surgical armamentarium,

that forms a new weapon to combat this dangerous enemy, ought to be, and certainly will be received by the profession as a highly acceptable gift.

It is because I have lately had some gratifying results from the procedure mentioned in this brief paper, and because conversation with other physicians has given me the impression that its importance is not yet fully appreciated, nor its practice as common as its importance seems to demand, that I have ventured to relate my experience with it. Furthermore, the operation is so simple that it requires no special surgical skill, the necessary instruments are so few and common that they must be easily accessible to every practitioner, who thus becomes enabled to treat successfully patients who formerly often had to be sent out of his hands, or perhaps yet oftener remained in his neighborhood and formed the text of many an unfavorable criticism.

As far as can be seen from literature the iodoform treatment is particularly adapted to cold abscesses from tuberculous osteitis, for instance the much dreaded psoas abscesses, to tuberculous synovitis, and possibly also to tuberculous osteo-arthritis, at least when the disease is in its incipiency. In the first class of cases, it will undoubtedly, when successful, prolong life, diminish or prevent suffering, nay, even lead to a more or less permanent cure for a disease which otherwise scarcely knows any other termination than a miserable death. In synovitis and osteo-arthritis it will save many a limb from arthrotomy, excision or amputation, all of them sadly mutilating operations. It is not claimed that it will be uniformly successful in preventing these melancholv sacrifices, but if this treatment can save only a certain proportion of limbs and lives, such results should take rank with the proudest achievements of conservative surgery.

Iodoform had been known from 1837, and it had been employed occasionally as a dressing for foul ulcers in various clinics on the Continent and in England since 1864. But it was not generally or extensively used before Mosetig Moorhof, of Vienna, in 1880 called attention to its antiseptic, deodorizing, analgesic and anti-tubercular powers. It became suddenly a general favorite among the surgeons and was at first used quite recklessly, until Mickulicz and Koenig in 1882 called attention to numerous cases of iodoform poisoning. The conclusion was soon reached that it was apt to be injurious in the very young and the very old, in persons with enfeebled hearts or impaired kidney action, and when it was used in too large doses. Surgeons profited by the warnings of these experiences,

and the remedy continued to enjoy a great popularity; v. Mosetig Moorhof could in 1885 report over eleven thousand cases without a single case of poisoning, and the most prominent leaders in Europe and America continued to place great confidence in its efficacy against many forms of wound infection, although it had to be admitted that it was powerless against certain forms; it was thus found impotent to prevent infection with erysipelas. It had, however, some very decided antagonists, among whom was possibly the most prominent, Max Schede, of Hamburg, who opposed it on clinical grounds. But the prevailing iodoform enthusiasm found in 1887 its most serious check when two Danish investigators, Heyn and Rovsing, published a very able and conscientious paper, in which they demonstrated that iodoform, at least outside of the body, had no germicide effect, and that it was frequently the very vehicle for infection. Heyn and Rovsing based their conclusions exclusively upon laboratory work; upon the behaviour of microbes treated by iodoform in artificial culture media. These conclusions were so utterly at variance with the immense accumulated experience of all the surgeons of the world that practical men refused to believe in their value. The Vienna school particularly made every possible objection to the validity of the inferences of Heyn and Rovsing, whom they at first tried to discredit with scientific accuracy and bacteriological knowledge. Many investigators who firmly believed in the efficacy of iodoform as an antiseptic, repeated Heyn and Rovsing's experiments; prominent among them were Lübbert and Sattler who performed numerous experiments on animals; Tilanus, Baumgarten, Behring, De Ruyter and other famous surgeons had to confirm the statements of the two Danes. Buchner, on the other side, was able to prove that the fumes of iodoform had a decided inhibitory effect on culture plates of the cholera spirillus. Shortly afterwards Neisser, the discoverer of the gonococcus, discovered that iodoform exhibited very different effects upon different germs, and De Ruyter and Behring demonstrated that while iodoform did not kill germs, it had a very decided chemical affinity towards the ptomaines produced by the germs; from their investigations it seemed that the presence of ptomaines was necessary to split up iodoform, and that some decomposition product had a destructive effect upon the ptomaines themselves. As the ptomaines are supposed to be the real causes of suppuration and the medium through which the germs exhibit their pathogenic effects, it seems a plausible theory that iodoform may prevent suppuration and some other

infections in this way, although it has to be admitted that it has not germicidal powers. But we know as yet too little of the relation of septic infection to suppuration and septicæmia to claim that we have a clear insight into the manner in which iodoform acts. We know a good deal about its limitations, we know that it is impotent against erysipelas, as well as against anthrax, while the opinions are yet divided against its effect upon the gonococcus. A similar discrepancy in the estimate of its anti-tubercular action has until lately prevailed, but the almost unanimous verdict of the working surgeons of various countries must be said to have settled the case in favor of its anti-tubercular powers. Verneuil, Verchère, Gosselin, in France, A. E. Maynard, of Scotland, Tilanus, of Holland, Billroth and Mickulicz, of Austria, v. Bruns, Neuwerch, De Ruyter, Behring, Trendelenburg, Krause, of Germany, numerous distinguished Americans, among them Senn, have given so unequivocal judgment in favor of its clinical power over tuberculosis, that we are compelled to accept it as a clinical fact.

In a question of this vital importance it may be allowed to quote the clinical experience of some of these great authorities, if not in detail, at least in brief review.

In the May number of *Revue de Chirurgie* for 1885, Verneuil relates his experience with injections of 5 to 10 per cent. solutions of iodoform in ether in cold abscesses; they were very encouraging, and Professor Verneuil advised them very strongly. He evacuated the contents through a good sized trocar, and injected up to 100 grammes of a 5 per cent. solution. The temperature of the body volatilized the ether; the iodoform was in this way precipitated as an impalpable powder over the whole surface of the abscess cavity, which became distended to its utmost capacity. After a month or thereabout, re-accumulation of pus had usually taken place to a certain extent, and he repeated his injection from two to four times, when the abscess cavity often shrunk, not to be filled again. I tried this treatment twice in 1887, but was disappointed. I got sloughing of the membrane lining the sac; the suffering after the injections was quite severe, and my patients had high fever, not however accompanied by the usual signs of sepsis, and spontaneously disappearing. A very prominent surgeon has verbally related to me that he has had similar unpleasant experiences, and I have definitely abandoned this form of iodoform injections. In 1887 Professor v. Bruns, of Tübingen, read before the Sixteenth Congress of German Surgeons a paper bearing upon the anti-tubercular action of iodoform in local tuberculosis. He used a ten

per cent. solution of equal parts of alcohol and glycerine, and reported 54 cases of tubercular abscesses treated in this way; out of this number 40 were cured, some of them holding from ½ to 1 pound of pus. In many of his cases parts of the tubercular wall were excised and subjected to a careful bacteriological examination by Professor Neuwerch, who found that the bacilli had disappeared and the tubercles ceased to proliferate. The tubercular (or inner) layer of the abscess wall becomes necrotic, is absorbed after undergoing fatty degeneration, and healthy granulations line the abscess cavity, which thus gets a chance to heal up. At a later Congress v. Bruns reported a yet greater number of cases, which further confirmed his previous conclusions. De Ruyter, of Berlin, and Senger, of Magdeburg, read papers before the Sixteenth Congress, in which they related their experiences and concluded that iodoform in the living tissues had decided anti-tubercular effects.

Nothing is more convincing than personal experience, and I shall therefore relate four cases of my own. I had given up Verneuil's iodoform ether injections, and treated my cases of joint tuberculosis by immobilization, arthrotomy and excisions until last year, when I had seen some remarkable results of 10 per cent. iodoform and glycerine injections in Senn's clinic in Chicago.

Case I. William Olsen, æt. 14½. Red Jacket, Mich. Seen in Oct., 1891. For two years the usual subjective symptoms of tuberculous disease of the left knee, which upon inspection exhibits the well known signs of arthritis fungosa, viz: an even, spindle-shaped enlargement of the joint; the normal bony prominences with the depressions between them, which give the knee its normal, finely modelled shape, are effaced; the color is that of the normal skin. The temperature of the joint is not perceptibly increased; there is some pain along the upper margin of the head of the tibia and over the insertion of both, especially the inner lateral ligaments. An accumulation in the joint is diagnosticated from the presence of fluctuation and the floating of the patella,which can be depressed in the intercondyloid fossa. There is some spontaneous pain, aggravated after exercise; stiffness when the patient first begins to walk in the morning, better after he has walked a little. There are no other manifestations of tuberculosis, but the boy has a somewhat delicate appearance. Father is said to have died from phthisis. After careful antiseptic preparations a trocar is introduced into the joint, some serous, flocculent, characteristically tuberculous serum is let out; the joint is washed with a 1 to 2000 solution

of corrosive sublimate, followed by irrigation with 3 per cent. boracic acid. About 2 oz. of a 10 per cent. emulsion of iodoform in glycerine is injected and left in the joint; the puncture opening is hermetically sealed with iodoform collodion and the limb put up in a plaster Paris splint. For the first 24 hours there is some pain, which after that time is replaced by complete euphoria. The plaster cast is removed after a few days. Re-accumulation of fluid takes place and a new injection is administered 14 days later. This is followed by less pain. After another fortnight a third injection; after this there is no re-accumulation; the joint gradually assumes a normal appearance, the swelling is gone, and while some stiffness remains, there is no pain when he walks nor at other times. After a stay of less than two months he has gone home apparently well. A recent verbal information is received by a neighbor, who states that there has been no relapse.

Case II. Mrs. C. H. Engen, Torsburg, Grant Co., Minn., ca. 35 years old. Is the subject of kyphosis, the result of an apparently healed spondylitis; she has also a tuberculous synovitis of the left knee joint, with tenderness along the upper margin of the head of the tibia. She receives the same treatment as the preceding case, ca. 3 oz. of the emulsion is injected the first time; this is followed by some febrile reaction, but no local inflammatory symptoms; the fever disappears entirely after 3 days. A second injection after 14 days; this is not followed by fever, but some transitory pain; a third injection 11 days later. This is followed by less pain than the two previous injections; there was a few days after each injection some swelling with effusion, which, however, gradually is absorbed. After 7 weeks' treatment she goes home cured of the tuberculous synovitis.

Case III. Miss Mary Haugan, æt. 19. Has for about 6 weeks suffered from a painful swelling of the right sterno-clavicular joint, which shows an indistinct fluctuation; upon pressing the shoulder towards the sternum pain is produced. She has of late become somewhat anæmic, but shows otherwise no symptom of tuberculosis. She belongs to a family where tuberculosis has been very prevalent. No fluid could be withdrawn from the joint, but it was hyperdistended by the 10 per cent. iodoform emulsion, and the arm and thorax enveloped in a light plaster cast, the arm supported by a sling. After three weeks the same procedure was repeated; it was observed that the swelling was considerably smaller than originally. After three injections and immobilization for ca. 8-10 weeks, an apparent

cure was accomplished. For four months she has enjoyed perfect health. Seen Sept. 9th, the joint apparently perfectly well.

Case IV. Miss Ellen A., Kenyon, Goodhue Co., Minn. Seventeen years old. Complains of stiffness of lower extremities and difficulty in walking; also of a general loss of strength and flesh; menstruation, which was established at 15, has been absent for several months. Upon examination of the tall, slim, and somewhat anæmic girl an œdema of both lower extremities is discovered, quite evenly distributed and in moderate degree. In the abdomen is felt a bilateral swelling reaching upwards to a level with the navel; the upper limit seems to be formed by two upward convex lines, united, or closely together in the median portion, which stands somewhat lower; the swelling dips into the pelvis, where it on both sides can be felt projecting under Poupart's ligament into the upper part of Scarpa's triangle. The swelling is fluctuating; communication between the two halves is uncertain, as the impulse of fluctuation is not distinctly transmitted from the one to the other. Hymen is unruptured and no vaginal examination is made. The swellings can be felt through the rectum. Upon examination of the position she assumes when standing, it is observed that there is a decided but not very marked lordosis; the ninth and tenth dorsal vertebræ project slightly backwards, but no pain is elicited on pressure; asked to pick up an object from the floor, she squats down and reaches the floor by bending the knees, not inclining the back, which is held stiff and immobile. She states that her difficulty in walking is of some three months' duration, while the stiffness of back was observed much earlier, perhaps a year. She was not aware of the abdominal enlargement, as it had taken place entirely below the waist band. The diagnosis of a double psoas abscess was made, and a guarded but generally unfavorable prognosis was given. The treatment with iodoform injections was proposed as the only rational treatment that I could suggest, and was eagerly accepted by the patient and her friends.

The 26th of January, 1892, the right psoas abscess was punctured and 1½ pounds (approximately) of whey-like fluid, wherein were some curd-like flakes, was evacuated through the opening just outside the femoral vessels. The psoas abscess on the left side was not affected by the evacuation of the right. After antiseptic irrigation about 6 oz. of the 10 per cent. solution in glycerine were injected. There was for a few days a slight febrile reaction; after one week the left psoas abscess was treated in the same way. On this side there was also evacuated nearly

1½ lbs. of fluid (exactly 760 cubic centimetres). The patient was altogether subjected to 8 injections, after which no re-accumulation took place. The swellings had entirely disappeared. In April she returned to her home apparently in perfect health. After her return home I had information by letter that the menstrual function had been reëstablished. Under May 25th her sister writes that her health seems perfect, but that she is not yet strong enough to work much; that the swellings have not returned, that her legs are small and show no sign of unnatural enlargements.

In her case I had on one occasion injected 8 ounces of the iodoform solution, corresponding to about 6½ drachms of iodoform, and no signs of iodoform poisoning had appeared.

The operation is so easy of performance that it ought to be the property of every practitioner, and I shall therefore submit a detailed description of the method as I have understood that it ought to be performed.

It might seem a supererogation to insist upon the most exact asepsis in these cases, where operations are performed upon joints or in the neighborhood of diseased bone. A diseased joint with its impaired cell vitality, its congested capillaries, and with the presence of pathogenic microörganisms, all included in a closed sac, offers to accidentally introduced bacteria an almost ideal soil, with the highest probability of disastrous results as its sequence. On the other hand, the conditions for maintaining asepsis in these operations are almost equally fortuitous. The brief time consumed in the operation, the small extent of the wound, the limited number of instruments required, and finally the prevention of any other but the operator's hand from coming into contact with the once sterilized instruments or operating field—all these circumstances combine to make the desired asepsis an almost absolute certainty.

The preparations begin the day previous to the operation by administering a full bath to the patient; after the bath the operating field is best covered by a soap poultice. Two irrigators or fountain syringes, a rubber stem syringe, to inject the emulsion, a glass vessel capable of holding it, are cleaned and kept over night in a one pro mille solution of corrosive sublimate. Shortly before the operation several large and small towels, gauze for dressing and two brushes are subjected to at least one-half hour's steaming, which can be done in the cheap sterilizer known as Arnold's, and which ought to be in the possession of every practitioner for general purposes of disinfection. No other instrument is usually needed than a small trocar with can-

ula; but in view of possible complications it may be well to be provided with a wire to clean the canula in case of plugging, a couple of needles, a pair of scissors, anatomical forceps, a couple of hemostostatics and a scalpel. These instruments should be immersed in a solution of one teaspoonful of sal soda to one quart of water, and boiled for five to ten minutes immediately before the operation; they are then lifted off the fire in the vessel in which they have been boiled, covered with a sterilized towel and allowed to cool. Iodoform collodion, cat gut and silk are ready in bottles, that have been washed and during the operation are left well corked in the corrosive solution in which the fountain syringes are immersed. A warm solution of corrosive sublimate, 1 to two thousand, is by an assistant poured into one of the irrigators or fountain syringes; a 3 per cent. boracic acid in boiled water into the other; they are now suspended a couple of feet above the patient. The operation field is then scrubbed by an assistant with soap and water, followed by washing with ether and finally flushing with corrosive sublimate. This final cleaning includes several inches above and below the intended seat of operation. The limb is then wrapped in sterilized towels, which are also spread over the adjoining parts. While these preparations have been going on the surgeon has sterilized his hands thoroughly by soap and brush and hot water for five minutes followed by a two minutes' immersion in a saturated solution of permanganate of potash; after this washing in a one per cent. solution of oxalic acid, and finally in a one to a thousand of corrosive sublimate. He now charges the syringe with the iodoform emulsion, without contaminating either the syringe or his hands, and replaces it in the solution of corrosive sublimate in which it has been kept. The trocar is then picked up from the vessel in which it has boiled, and is introduced into the swelling; upon withdrawal of the rod, the fluid runs out of the canula; the fountain syringe containing corrosive sublimate is now connected with the canula and the cavity flushed several times until the fluid returns clear; if it stops, it is cleared by means of the wire. After thorough washing with corrosive sublimate solution, the solution of boracic acid is injected and after its removal the iodoform emulsion; the canula is withdrawn without allowing the emulsion to escape. The trocar wound is usually easily sealed up by iodoform collodion and cotton, and the operation finished. If the opening is not completely and securely closed in this way it may be necessary to take one or more stitches to secure hermetic sealing. The patient ought to be kept quiet after the

operation, and the limb may even require a light immobilizing bandage. After a couple of weeks it will generally be found that the fluid has re-accumulated and the injection must be repeated after evacuation of the fluid. My patients have several times asked for an anæsthetic for this operation, and I have no objection against it. When a patient is perfectly quiet under ether or chloroform there is less danger of accidental infringements of the principles of asepticism.

REMARKS ON THE TREATMENT OF SYPHILIS.

BURNSIDE FOSTER, M. D.

Can syphilis be cured? A question very often asked and very variously answered. If by being cured is understood that a patient may marry without danger of infecting his wife or of procreating tainted offspring, may live in apparent health and during the unabbreviated period of his normal life, with no symptoms save an occasional and transitory reminder, I think most of you will agree that syphilis is as curable as any known disease. Is syphilis often cured? To this question our answer must be, No; and it is to an explanation of this answer and to a discussion of the treatment of this most protean of diseases that I shall invite your attention to-day.

Almost as old as our knowledge of syphilis is our knowledge of mercury as the remedy-in-chief upon which we depend in our treatment, and it would seem that nearly four centuries of experience would have established an unanimity of sentiment concerning the method of its administration, the proper time at which its use should be commenced and the period during which it should be continued I do not mean that there should be any fixed and positive rule applicable to every case, because in a disease of such varying intensity and which presents itself to us under such varying aspects, and in individuals of such diverse idiosyncracies, the problems are so complicated and so changeable that an unvarying and universal solution would be manifestly impossible.

Making a rough estimate from the observations of a number of men of large experience, syphilis may be divided according to the severity of its symptoms into (1) feeble syphilis, about 58 per cent.; (2) severe syphilis, about 37 per cent.; (3) galloping syphilis, about 5 per cent. The explanation of this is to be found not in the disease itself, but rather in the individual, for

it is a common observation that the milder form in one individual may give rise to the severest in another, and *vice versa*. Although the exact nature of the virus is as yet unknown to us it is probably the same in every case; and like a seed its growth will be more or less luxuriant according to the soil upon which it falls. The late, and often severe and fatal lesions of syphilis are usually only seen in one of three classes of patients. Those whose early period, the disease perhaps having been innocently acquired, passed unobserved and untreated; those who came early under treatment, but on the disappearance of their symptoms believed themselves cured and against advice took the case into their own hands; and those who have been improperly treated by physicians either carelessly or on account of insufficient knowledge. For the results of cases coming under the first two classes we are of course not responsible, but I fear that the enormous responsibility which sometimes belongs to the physician in cases of the latter class is too often not fully realized. The most fatal of the late lesions of neglected syphilis are undoubtedly those connected with the nervous system, and it is the almost unanimous experience of those who have seen most of it, that where a history can be obtained at all, it will tell of a very mild early period, which deceived the patient and perhaps the physician, and gave an unwarranted feeling of security which resulted in insufficient treatment. The early eruptions and symptoms disappear after a few weeks of treatment and then the patient, whether unwarned by the physician or heedless of the warning, discontinues his treatment and is lost sight of for months, perhaps for years, there being no apparent evidence of the enemy which lurks beneath the surface. It must be admitted that there are cases in which this history completes the case and nothing more is ever heard of the disease, but we are not justified in following an expectant plan of treatment in a disease of such gravity because now and then an exceptional patient, perhaps protected by some unusual bodily condition, has escaped, unharmed and untreated, the fearful dangers of late syphilis.

It would not profit us, even were it possible within the limits of this paper, to rehearse the many different views which have from time to time been advanced in regard to the best methods for the treatment of syphilis in its different forms, but I believe that it will be both interesting and profitable to discuss the question in the light of our present knowledge, and to see what, if anything, can be learned by sifting the experience of the more recent investigators. The possibility of aborting syphilis by

the destruction of the initial lesion has of late received a great amount of attention from many diligent and competent observers. It was most surprising to me to learn that in the debate on the value of excision of the chancre, by the Section of Dermatology and Syphilis of the last International Medical Congress, Neumann, of Vienna, alone maintained that it was valueless. A very considerable number of cases were reported, and more have since been added, in which positive results were obtained in a sufficiently large proportion of cases to make the observers believe that syphilis may occasionally be entirely aborted, and may often be greatly modified in its course by early excision of the point of infection and of the surrounding tissue.

If Finger's recently announced views be correct, and his opinion certainly deserves our most thoughtful attention, excision is a logical and proper procedure in approximate cases. While admitting that we have not yet positively identified the specific bacillus, he maintains that the early symptoms of the secondary stages are due to systemic intoxication by the gradual absorption of ptomaines produced by the virus localized at the point of infection. And he further believes that the severity of the disease depends to some extent upon the dosage of the virus. According to this view, the absorption and general infection being gradual and slow, it would seem that there might be a period between the appearance of the chancre and the enlargement of the inguinal glands, when excision of the primary syphiloma would succeed in eliminating the disease. Even if we do not eliminate the disease in this way there is the further possibility that by removing the deposit of infection we may greatly lessen the amount of the poison in the system and thereby mitigate the symptoms. I believe then that the already accumulated evidence is sufficient to warrant excision in certain cases, where the position of the chancre will allow of it, always of course informing the patient that we are giving him only a chance, and keeping him constantly under observation even when there are no evident symptoms, for at least two years.

If every physician who practices excision would carefully record the details of every case which he treats in that way, noting all the important facts, and these facts could be from time to time collected and published, it would not be very long before we should have cases enough to establish the value of the procedure.

In the presence of an established and undoubted syphilis, in one of its typical forms, how shall we treat it? I believe that there is no disease in the treatment of which we make use of so few drugs, for there are but two in practical use, and yet in

which there is as much diversity of opinion as to the manner of their administration. Before discussing the specific use of mercury and iodine, the important question arises as to how soon after the diagnosis of syphilis has been made shall we begin their use. I believe that except under very unusual circumstances it is a mistake to begin the (internal) use of either mercury or iodine during the primary period, that is when the initial lesion is the only symptom. There are certain advantages, or apparent advantages, of this early treatment, and there is no doubt that where it is employed the first symptoms of the secondary period are rendered very mild, transitory and irregular, and are sometimes entirely suppressed. Neumann, Hebra, von Zeissl and Finger have all abandoned preventive general treatment after having persistently employed it and studied its effects for many years. Kaposi says that whenever he has been led astray by logic or external circumstances to adopt general treatment before the outbreak of the eruption, he has had reason to regret it. The experience of those who have treated large numbers of cases after this plan has been that while the typical secondary symptoms have been mild or perhaps absent, the deeper lesions have appeared early and have been of unusual severity. Syphilis of the nervous system has been shown to be particularly grave in those cases where treatment has been begun from the first. Neumann, although formerly an advocate of, now opposes early treatment, believing that, as he expresses it, by it we change the localization of the manifestations. Where there has been no preventive treatment, cutaneous eruptions and enlargements of the glands being the predominating symptoms, whereas after it the mucous membrane of the mouth and pharynx, especially the lips and tongue, present many patches and perhaps gummous lesions. There will of course, occasionally, arise a case where on account of the position of the chancre, or on account of the social relations of the patient, it is of the utmost importance to hasten the disappearance of the symptoms. I believe in such cases it becomes the physician's duty to explain the advantages and the disadvantages of early treatment and leave the decision with the patient. There are a few syphilographers who go to the other extreme and advise what I cannot but believe to be a dangerous plan, namely, the so-called expectant plan of treatment. This is based upon the fact that true syphilis, like any other disease may, in a certain proportion of cases, recover spontaneously after a longer or shorter period without the use of any drug. The plan of treatment consists in permitting the disease to run its spontaneous course,

so long as the symptoms are typical and mild, with suitable regulation of the diet and general attention to hygiene. If the secondary symptoms disappear after about eight weeks, no specifics are administered and future symptoms are treated as they may arise. In case the symptoms persist longer than eight weeks the iodides are administered and mercury is reserved for the severe cases. Von Zeissl advocates this treatment and claims good results. I do not believe that he will have many followers, and I should certainly be unwilling to subject any patient of my own to what seems to me the very great and unnecessary risk of the expectant treatment. Those who defend this method believe that many of the late and disastrous symptoms of syphilis have been caused more by mercury than by the disease itself. It is very true that the careless and ill-advised use of mercury is often responsible for much damage, and I believe also that the use of mercury at too early a period of the disease is harmful, or may be; on the other hand, I believe that a properly supervised mercurial course is demanded in every case of undoubted syphilis, however mild the early symptoms may be.

Without attempting to name or to discuss the very many different methods for the administration of mercury and the iodides, or to suggest any thing new, I shall speak only of those methods which have received the sanction, as it seems to me, of men of the most mature experience. While it is perfectly possible for us to settle upon a uniform plan of treatment applicable to a considerable proportion of cases, individual idiosyncrasy and variable conditions of the disease will often make it necessary for us to modify this plan and to resort to methods more appropriate to the special conditions which we find.

Let us suppose a case of syphilis, in private practice, and at the time when it is proper to commence our internal treatment, which time, as I have indicated, I believe to be when the early symptoms of the secondary period have made their appearance. What we have to do is to exhibit mercury in such a way that it shall get into the circulation and be brought into contact with the tissue. Theoretically, and sometimes practically, the introduction of mercury through the skin either by inunction, fumigation or baths is the best way to do this, but in private practice the inconvenience of these methods, and the fact that equally good results may be obtained in other ways, make us reserve them for exceptional cases.

It is only in very exceptional cases that the best results cannot

be obtained by administering mercury by the mouth, and the convenience and simplicity of the method gives it great advantage over all others. During recent years the iodides of mercury, and especially the proto-iodide, have been extensively used, but I cannot appreciate their advantages, and they are certainly more irregular in their action and more liable to cause derangements of digestion than the simpler forms. Hydrargyrum cum cretâ will be found to agree with most persons and will accomplish all the requirements of a mercurial course, and I believe it to be the most satisfactory of all the preparations of mercury. In order that the system may become gradually accustomed to the drug, it is best used in small and frequently repeated doses, and I prefer to prescribe it in half grain pills to be taken every two hours or so during the day so that at first about four grains shall be taken in the twenty-four hours. Ordinarily this will not cause diarrhœa or griping, but in some cases it will be advantageous to combine an equal quantity of Dover's powder in the pill. A slight soreness of the gums is rather to be expected than otherwise, but ptyalism should, and can easily be avoided. With suitable attention to the ordinary rules of hygiene, the care of the mouth and gums and the avoidance of smoking, the grey powder may be administered in this way during a course of many months and the patient will often be found to improve greatly in general health. Individual cases and circumstances will of course modify the dose and method of administration, but only in exceptional cases will it be found necessary, during the first year of treatment, to use other forms of the drug. A mercurial course of this kind should be continued for at least eight months and as a rule it need not be maintained for more than twelve months. It will sometimes be best to have occasional brief intermissions of treatment, but with the small dose, frequently given, this will not often be necessary. During the second year the patient should be kept constantly under observation and specific treatment adopted at such time and in such manner as special circumstances may indicate.

In the absence of special symptoms, and particularly if the general condition of the patient seems to indicate it, a cessation of specific treatment and a course of tonics, iron, cod liver oil and so on for two or three months, will be found advantageous. At the end of this time, that is at about the third or fourth month of the second year, I like to begin with some combination of mercury with the iodide of potassium, continuing this according to circumstances, for a few months, and then during the last half of the second year the mercury may be

omitted and the iodide of potassium administered in gradually increasing doses up to the point of tolerance. Two years of treatment is the very least that can be considered sufficient, and in many cases at the end of this time if the patient has been faithful and obedient the disease will be cured. The patient should be warned of the possibility of future reminders and advised to report at once if any special symptom appears.

During the last few months I have been making some observations on the tannate of mercury, which was first proposed by Lustgarten, and it seems to me to be one of the most satisfactory and useful of all the preparations for internal use. I was particularly pleased with it in a case of severe syphilis where the patient was unable to take any other preparation, and the tannate promptly controlled the symptoms without producing any injurious effects on the digestion. It may be prescribed in ½ grain or 1 grain pills and in doses of from four to six grains daily according to circumstances. It is a stable preparation, is quickly assimilated and quickly eliminated, and a relatively large quantity of mercury may be given when needed with great safety. It is said also to be well borne by children, but of this I have had no experience. I consider that it is a very valuable addition to our resources against this disease.

The subcutaneous administration of mercury in the treatment of syphilis has never become very popular in this country, although its value in certain special cases is recognized and appreciated. Where it is necessary to bring the patient as quickly as possible under the influence of mercury, as in iritis, some forms of syphilis of the nervous system, or where there exists a chancre on the face, we can usually obtain results very rapidly by this method. In this connection I should like to speak particularly of some points in regard to syphilis of the nervous system, which of all forms of this disease is the most to be dreaded. Fortunately, where the patient has been under competent observation and treatment from the beginning, the nervous system usually escapes, and it is safe to say that severe symptoms relating to the nervous system very rarely occur except in cases where the early period of the disease has been neglected. Individuals who are inclined to nervous troubles, those of neurotic antecedents are very much more likely to suffer from nerve syphilis than others.

Epilepsy, hemiplegia and general paralysis are the commoner conditions brought about by specific lesions of the nervous system. Lesions of the spinal cord are less common than of the brain and usually come at a later period of the disease. It is

not always easy to obtain a history of these cases, occurring as they commonly do long after the earlier syphilitic manifestations have disappeared, and valuable time is often lost before the diagnosis is evident. Frequently, indeed, the true nature of the trouble is not made clear until specific treatment has been instituted and the improvement under it observed.

It is not possible, of course, to lay down rules of universal application, but in the vast majority of cases of severe nerve syphilis of whatever form, the first thing to do is to bring the patient as promptly and thoroughly as possible under the influence of mercury; and usually this can be best accomplished by administering it subcutaneously. It must be borne in mind that our object is not merely to cause the disappearance of present symptoms, but it is also to prevent the recurrence of any further manifestations of the disease, and this can in many cases be accomplished, but only by keeping the patient for a long time under treatment. There is much difference of opinion as to the best preparation of mercury to use for subcutaneous injection, some having preference for soluble preparations and some for insoluble ones, and without doubt in the hands of competent and careful men equally good results may be obtained from either, and both have their advantages and disadvantages. The safest, and in my opinion, the most satisfactory preparation is a watery solution of the bichloride of mercury, having a strength of one-twelfth of a grain to ten minims of distilled water. I cannot appreciate the force of the objection which has been raised to this preparation that it is too quickly eliminated and that therefore it will be necessary to make daily injections of it. The injection causes very little pain and I have never seen an abscess from its use. In several cases of severe nerve syphilis the improvement after a few weeks' treatment by the daily injection of from 1-12 to ⅛ gr. of the bichloride has been almost marvellous.

It is important to ascertain the condition of the kidneys before commencing such a course of treatment, and if any serious lesion of them exists we must proceed with the very greatest caution. If improvement is satisfactory and the urgent symptoms have passed away, after a few weeks we may stop the injection and administer a combination of mercury and iodide of potassium by the mouth, always bearing in mind that treatment must be continued long after the disappearance of all symptoms.

Dr. Julius Althaus, in an interesting article on "Syphilis of the Nervous System," describes a preparation of mercury for subcutaneous injection which is, I believe, original with him,

and which of all insoluble preparations seems to be the best. It consists of one part of metallic mercury, thoroughly rubbed up with four parts of the purest lanolin and then well mixed with five parts of a two per cent. carbolic oil. Ten minims of this "cream" contain one grain of metallic mercury. In preparing this it is essential that the mass be thoroughly triturated until all of the mercury has been "killed" and no metallic globules can be distinguished. This seems to me to possess certain advantages over the other insoluble preparations of mercury, and its use is said to be absolutely painless. Althaus recommends an injection of five minims (half a grain of mercury) once a week. I have had no personal experience in private practice of this, or of any of the insoluble mercurials, as I have hitherto been perfectly satisfied with the solution of the bichloride in those cases where it was necessary to resort to treatment by subcutaneous injection.

THE SURGERY OF INJURIES AND DISEASES OF NERVES.

C. H. Mayo, M. D.

Mr. President and Fellows of the State Medical Society: In presenting to you a paper with the above title, it is with some hesitation lest in an effort to cover so extensive a subject in the time at my disposal I may not make my remarks clear or intelligent to you. If such be the case I hope it may be brought out and made plain in the discussion by this honorable body.

It becomes hardly necessary to more than mention the several varieties of traumatism producing nerve injury, as fractures, wounds, diseases, etc., etc. The nerves of the upper extremity are most frequently involved by injuries inflicted by sharp pointed or cutting instruments and phlegmonous processes. Injuries by compression and the results of dislocation or fracture are of frequent occurrence. Stimson recently reported an interesting case in which a fracture of the humerus severed the musculo-spiral. The nerve was sutured but its function was lost for nearly two years. Many cases of peripheral neuritis follow dislocation of or even slight injuries about the shoulder joints which have required rest for a few weeks. The effusions or hemorrhages into the peri-articular space may bind down certain nerves with the resulting adhesions, and the only relief is in forced motion; such injuries have been fully described by Golding Bird. Many cases of paralysis, usually tempo-

rary, occur following injuries of the brachial plexus. I recall one case in which a railroad employe was thrown forward striking on his shoulder by the sudden stopping of a train. A peripheral neuritis followed which was considered permanent and the company settled the claim of damages within a few months, paying a large sum. One year later the arm was restored to full usefulness. Such cases are well to bear in mind.

In many instances nerve injury is unavoidably produced by the surgeon, such as section of the spinal accessory in the removal of tubercular or other tumors, from the cervical region, or injury of the facial nerve in operating about the parotid gland; also in the removal of the tympanic ossicles by severing the chorda tympani, and in Phelps' operation for club foot by cutting the plantar nerves. There are other cases of neuritis or neuralgia following compression or irritation of the new formed tissue, such as the adhesions following fractures producing paralysis some time after injury. The neuralgia in the region of tumors and cancerous growths, which in some instances is best relieved by section of the nerve, as cutting the gustatory nerve in cancer of the tongue. To follow the neuralgia of pressure still further we have the Morton's foot in which Morton advises excision of the head of the fourth metatarsal bone. Before considering the intentional operations upon nerves, a thorough understanding of the pathology of nerve injury becomes absolutely necessary, and for this reason I go into the subject somewhat in detail.

A nerve that is severely bruised or stretched or cut across begins to degenerate in all of the peripheral parts at once. The myelin runs into cylindrical masses which become granular and fatty, at last disappearing. The axis cylinders split up into fibres and disintegrate so that they can hardly be recognized in the second week, and the nuclei of the sheath increase in size and number. In two or three weeks the whole peripheral part is atrophied. The central end changes in like manner, but only for one or two nerve nodes in extent; all above remains unchanged for years. While this degeneration is the rule, we have exceptions which occur in some cases in which immediate primary union of the nerve trunk has taken place. Such a result has been secured in many of the experimental operations upon animals, but unfortunately is not often seen in man although severalcases are reported. Gluck, an enthusiastic experimenter, in many operations upon the sciatic nerves of fowls and rabbits, making complete section and suturing the divided ends, was gratified to see a return of function in two or

three days in very many instances. Such results are not to be expected, however much they may be desired. Immediate suture even when apposition is exact usually requires weeks if not months for a return of function.

Bolby describes a process of regeneration of the degenerated nerves, a change which may take place in a few weeks, but usually is delayed six or seven months after injury. The nuclei of the sheath increase in number, become spindle-shaped and arrange themselves in rows in the spaces of the perineurium, and gradually assume the structure of fibrils around which myelin develops. It is such a process which makes possible the secondary suture of nerves. After such a regeneration, if the divided ends are not approximated permanent degeneration takes place. If union does not occur the spinal end of the nerve remains unchanged, or possibly forms a nerve bulb such as is seen after amputations, such enlargements consisting of an increase of connective tissue, and in most cases new nerve fibres are also found in abundance.

The immediate symptoms of a nerve injury are such as relate to sensation and loss of power in the parts supplied by the nerve. Because of the frequent anastamosis of nerves, signs afforded by loss of or perverted sensation are not always easy to analyze, but a loss of sensation over all the region supplied by a nerve is positive. Loss of muscular power is equally positive, provided that it is followed by the reaction of degeneration. Such a reaction means a rapid wasting and loss of faradic excitability, with the continuance for a time or even a temporary increase of galvanic excitability of the muscles supplied by the injured nerve, which gradually decreases until no effect is produced by any electric current.

The secondary changes are those of atrophy of the muscles and connective tissue; the skin becomes glossy and smooth, the hair disappears, fibrous anchylosis of the joints involved follows, the nails become curved, especially laterally, and occasionally perforating ulcers appear, particularly about the feet. These perforating ulcers are of the same character whether following the neuritis of diabetes or due to section or injury of the nerve supply. One case illustrative of perforating ulcer due to injury I was recently fortunate enough to observe. A perforating ulcer of the heel due to a mangling of all the posterior tibial structures in a mowing machine years before. Ulcers of this character as well as the more common perforative ulcers of the foot following sclerosis of the spinal cord are usually healed with treatment and rest, but are liable to again re-

turn at or near the same location. It is surprising how little was known concerning these cases until Savory and Butlin prepared extensive reports on the subject in 1879.

The contusion, compression and stretching of nerves may be considered together. The changes, if lesion is severe, are similar to those described under degeneration and regeneration of nerves. The severity of the injury determines the amount or form of the paralysis, also the length of time before a recovery of function takes place, and while the injury may be so severe that the primary loss of sensation and paralysis is obscured and even in some instances secondary changes of atrophy or loss of faradic excitability ensue, the prognosis is good while the continuity of the sheath remains unbroken.

This brings us to the intentional operations upon the nerves. These may be divided into (1) nerve stretching; (2) neurotomy or section of nerve trunks; (3) neurectomy or excision of a portion of nerve trunk; (4) neurorrhaphy or suture of a divided nerve trunk immediate or secondary; (5) nerve grafting or the splicing of shortened, divided nerves.

The operation of nerve stretching was first intentionally performed by Nussbaum in 1872. This procedure has since been applied to all the nerves of the body probably from the optic nerves down. We all remember how much of the original medical literature of two years ago was devoted to the report of cases of all kinds of spinal paralysis cured or improved by suspension. The best effects of nerve stretching were seen in certain cases of sciatica and of peripheral neuritis, and in some forms of neuralgia and spasmodic contraction of muscles. The direction of the traction affects the result; if made in a direction away from the cord, anæsthesia is more marked than the paralysis; if in the opposite direction the reverse is the case. Horsley, in describing nerve stretching says the nerve being firmly held between the finger and thumb, steady traction is made for five minutes first away from and then toward the cord for a like period. Smaller nerves may be stretched over an aneurism needle. This operation is capable of wide application, as in most cases it will precede the operations of neurotomy or neurectomy because of its simplicity in performance and from the fact that the other more serious operations depend upon the result, temporary or permanent, following the nerve traction; also it may be deemed advisable to operate a second time, making more extensive traction, rather than to at once induce a paralysis by section or excision of a portion of the nerve. The supra-orbital nerve is operated upon for severe cases of frontal

neuralgia, the nerve being exposed as it passes up from the supra-orbital notch. The superior maxilliary nerve is often dealt with in the treatment of neuralgia of the upper teeth. This nerve gives off three dental branches,and to obtain any effect upon them the nerve must be exposed between Meckel's ganglion and the infra-orbital canal. Carncohan, of New York, was the first to excise this nerve. His operation was to open through the antrum of the superior maxillary bone, and opening its posterior wall with a trephine to grasp the ganglion and cut off above with slender scissors. Chavasse has collated twenty examples of this operation and in only three did the relief appear permanent. Treves has operated five times without a permanent success. Several other methods of operating upon the nerve have been described by various operators, all proposing some method of reaching the spheno-maxilliary fossa from the side by section of the zygoma or through the malar bone. Treves in his late operative surgery, speaking of this neurectomy, says: "These operations are all needlessly severe and involve wounds of great and unnecessary magnitude; since it is to be questioned whether the neurectomy is of permanent value, the operations described can hardly be justified by the results obtained." Operations upon the third division of the trifacial nerve are made in a similar manner, by removing temporarily the zygomatic arch and reaching the nerve in the spheno-maxilliary fossa. The inferior dental, the largest branch of the third division of the fifth may be exposed from within just as it enters the bony cavity; the operation wholly performed in the mouth becomes very tedious and bloody, but is the one recommended. The nerve is more commonly exposed in the canal by external incision and trephining or chiseling away the bone to reach the canal.

The removal of the Gasserian ganglion has been recorded a few times recently; two cases by William Rose reaching the ganglion through the spheno-maxillary fossa; two cases by Edmund Andrews, who with Rose's incision trephines the floor of the skull and gnaws through to the ganglion, removing it with sharp curettes; and one case by Horsley, who trephines in the temporal fossa and removes the nerve by avulsion from within the skull.

Section has been made of the buccal and auriculo-temporal nerves. The facial nerve has repeatedly been stretched for facial tic, many fairly successful cases being reported although but few stood the test of time. The various cords of the brachial and cervical plexus may easily be exposed for operation.

Within the last few years several cases of operation upon the spinal accessory have been reported. The nerve is readily exposed on either side of the sterno-mastoid muscle. In operating upon this nerve for the relief of spasmodic torticollis, if the result obtained is only partially successful due to the involvement of the deeper muscles, a secondary operation may be made upon the upper branches of the posterior cervical nerves as described by Keen and Bull recently for other forms of complicated wry neck. The nerves of the extremities are readily accessible for operation, the technique of which is similar to the ligation of arteries. Several cases of severe intercostal neuralgia and muscular tic are reported as benefited by stretching or section of the intercostal nerves. I report here a few cases of stretching and section.

Neurotomy of the spinal accessory. Miss W., aged 30, had suffered from a gradually increasing spasmodic wry neck for the past five years. It was so marked at this time that she was unable to work at her occupation of sewing. She had been subjected to all kinds of nerve tonics and electricity, and was becoming very hysterical. I operated on this patient nearly a year ago, making section of the spinal accessory before it enters the sternomastoid. There has been complete relief from the spasm since; the patient has gained in weight and there is a marked mental improvement. It is possible to improve on this operation by separating and stretching the branch of the spinal accessory which supplies the mastoid muscle, and thereby prevent a paralysis of the trapezius and consequent loss of contour of the shoulder.

Mrs. F., a lady of 33 years, had suffered from sciatica of right leg for twelve years and for the past two years employed crutches in moving about. I cut down upon and stretched the sciatic nerve using a force of 20 to 25 pounds; after two months' rest she was enabled to go about without crutches. There was full motion and comparative freedom from pain; such relief has now lasted one year.

Mr. E., aged 55, was injured in the left wrist by a hay fork when he was 30 years old. In the resulting phlegmonous process his hand and wrist became crippled and useless. For the past five years there has been an increasing tremor and pain confined to this arm. In a belief that his symptoms were due to an irritation of a nerve bound down with adhesions in the hand and wrist, I made a neurectomy of the musculo-spiral and of the ulnar, but there was little relief following the operation, and

a few months later the forearm was amputated at the upper third.

Mrs. F., aged 34, has suffered for the past year from a severe neuralgia of the left forearm and hand, limited to those parts supplied by the ulnar nerve. The nerve was stretched above the elbow, and with the return of motion the pain was again present and the neuralgia still persists.

Mr. K., aged 45, had suffered for three years from a severe form of neuralgia of the left inferior dental nerve. He had all the teeth on that side extracted without relief. The nerve was exposed in its canal by the chisel and the nerve torn out at the highest point. The patient has been greatly relieved for the three years since the operation.

Mrs. Q., a fleshy lady of 50, recently came under my care for a neuritis of the circumflex nerve; she suffered from constant neuralgia in the arm and shoulder with limited motion. The adhesions were broken up under ether, and after a short treatment of massage and forced motion the symptoms were relieved.

A maiden lady of forty years had suffered neuralgia in the left supra-orbital region for several months. The supra-orbital nerve was exposed and stretched. Partial relief was obtained, which was the condition several months after, when the case passed from observation.

It is in the operations of nerve suture and nerve grafting in which successful results are the most pleasing. It will appear to one reviewing the literature of this subject that nerve tissue is as capable of sustaining operative interference as the other structures of the body. The needles best adapted for passing the sutures are the common round sewing needle or a very thin flat needle. These will injure but little of the nerve structure. In large nerves the sutures may be passed directly through the nerve, while in the case of the smaller nerves in many instances it will be found sufficient to appose the cut ends by suturing the sheaths. In some instances the nerves will have retracted, as in secondary suturing, after freshening the ends or removal of a nerve bulb; the ends may still be approximated, although quite a space separates them, by stretching the nerve both ways. In such cases it will be best to insert a few stay sutures into the sheath and surrounding tissues to prevent too great a traction upon the ends. It has been proposed to make an incision half through the nerve trunk as far from one end as they are separated, and splitting back nearly to the end then reflecting the flap obtained to connect the two ends. When

the distance separating the ends is deemed too great to be bridged by these methods, nerve grafting should be tried. Atkinson reports five cases of nerve grafting which he has collected, all more or less successful.

One case is reported by Mayo Robson in which two and a half inches of the median nerve was removed in operating upon a tumor of the arm. Twenty-four hours later two and a half inches of the posterior tibial was removed from a leg just amputated and sutured to the ends of the divided median. Thirty-six hours after there was slight return of sensation, and five weeks later sensation and use were restored. The muscles of the thumb were still somewhat wasted but not completely paralyzed. Another case reported was one in which two of the sciatic nerves of rabbits were inserted to connect the widely separated ends of a nerve, and although suppuration followed a successful result was obtained. The small neuromata found on cutaneous nerves are of frequent occurrence, especially about the elbow. Their removal presents no difficulties and the relief is immediate.

OPERATION FOR EMPYEMA BY EXCISION OF A RIB.

G. W. McIntyre, M. D.

Joseph Kelzenberg, German, æt. about thirty-five, with a dark complexion and lymphatic temperament, became melancholy in 1886 and has since suffered frequent recurrences of mental depression, coming on at irregular intervals and varying in duration from a few weeks to several months. He was admitted to the hospital, November 7, 1890, in a melancholy state and manifesting unmistakable evidences of permanent, mental inpairment. His mental processes were extremely slow, his memory very defective, his patellar reflexes exaggerated, and there were some evidences of paresis in certain groups of muscles. He was extremely careless in regard to his personal appearance, and, as a rule, perfectly indifferent to his surroundings. He did, however, on several occasions, become greatly excited and throw dishes and other articles at imaginary beings, thereby indicating the possession of optical or auditory hallucinations, but such attacks of excitement were rare and only lasted for a few moments at a time.

During the following year his physical health gradually improved, and he became less despondent. In the latter part of the summer of 1891 he had so far improved that he was permitted to go out and work with the farmers, which he continued to do until the eighth of January following, when he was sud-

denly taken ill. The earliest symptoms noticeable were those which usually accompany a severe cold, but as "la grippe" was epidemic here at that time it was impossible to decide positively whether this sickness was caused by exposure or by the influenza. He first complained of a sharp pain in the right side, refused food, and took to his bed, where he assumed such positions as tended to limit the movements of his ribs on the affected side during the respiratory acts. His temperature rose to 105°, his pulse was full and bounding, his respirations hurried and superficial. There was marked coryza, his face was flushed and cough was a prominent symptom from the commencement. During the first twenty-four hours he expectorated the "brick-dust" colored sputa which are supposed to be characteristic of pneumonitis. Percussion showed slight dullness over the lower lobe of the lung, and auscultation revealed the presence of fine, crackling râles in the same region. The fever was controlled and the pain greatly modified by giving an occasional dose of antipyrine. Small doses of hydrochlorate of ammonium were given every four hours from the commencement of the attack, and counter-irritation in the form of a mustard plaster was applied over the affected side.

After the second day the pain ceased, but cough continued and the dullness became more marked. On the sixteenth of January the percussion note was flat over the whole lung. Applying a stethoscope to the side one could only get the sound of tubular breathing. At that time the heart was apparently displaced to the left and seriously embarrased in its movements. The pulse was small and rapid, the respirations hurried and shallow. The lips were cyanotic, and every attempt on the part of the patient to sit up, or even to lie on his left side, was accompanied with distressing dyspnœa. Changing the patient's position did not alter the line of percussion dullness. As the evidence pointed clearly to an effusion into the pleural cavity, an aspirating needle was passed through one of the intercostal spaces, and about one quart of fluid, semipurulent in character, drawn out. The operation afforded the patient very great relief and he remained fairly comfortable for several days, but on January 25 it was evident that the cavity had refilled, as all the former distressing symptoms were present again. The patient refused all food and medicine. His pulse registered 140 per minute and became irregular whenever he attempted to change his position. The respiratory movements varied from 30 to 50 per minute. His temperature ranged from 101° in the morning to 103° in the evening. The aspirating needle was reinserted and

about one pint of fluid drawn out, which was unmistakably purulent in character. This second operation afforded but slight relief, and on January 28 his condition had grown so bad that a consultation of physicians advised a free incision and drainage.

Ether was accordingly given and an incision two and one-half inches in length made along the ninth rib, in the axillary line. The subcutaneous tissues were next divided down to the bone, the periosteum dissected back, and a section of the rib one and one-fourth inches in length cut out with an ordinary pair of bone-forceps. No vessels were tied and the venous oozing was inconsiderable. An examination of the ends of the bone in the wound showed that they had been smoothly cut and that no slivers or sharp edges remained, which would be likely to do injury to surrounding tissues. The pleura, which as yet had not been cut through, was seen bulging up at the bottom of the wound. Catching the membrane with a pair of forceps, a small opening was made from which pus spurted with considerable force. A towel, wet with a solution of bichloride and folded into several thicknesses, was pressed down over the cut in order to prevent too rapid emptying of the pleural sac. When the greater part of the fluid had escaped, a pair of dressing forceps were passed into the cut, the blades separated and then withdrawn, thereby enlarging the opening through the pleura sufficiently to admit three fingers. The sac was then thoroughly washed out with a two per cent. solution of boracic acid. Notwithstanding the fact that more than two quarts of fluid had been removed from the pleural cavity in a comparatively short space of time there were no evidences of shock following the operation. On the contrary the patient's pulse beat more slowly and with greater force after the fluid had been withdrawn than it did before. Respiration, also, was much easier, and the respiratory acts were not accompanied by as much cough as is usual after such operations. A drainage-tube, made of half-inch rubber tubing, which had been kept in a five per cent. solution of carbolic acid for several hours, was then inserted and retained in position by a long, nickel-plated safety pin stuck through the end of the tube. The pin was held away from the cut by a pad of iodoform gauze, and it was covered with several layers of carbolized gauze, and a large pad of absorbent cotton. The dressing, large enough to reach from the axilla to the crest of the ilium and from the median line in front to that posteriorly, was held in place by a broad band of linen passed around the body and sewed securely. It was prevented from

slipping down by short suspenders which were passed over the shoulders and stitched securely to the bandage both in front and behind.

On the day following the operation the dressing was found to be saturated with the discharge, and was, therefore, changed. The cavity was not injected, but the side was carefully washed with a solution of corrosive sublimate and a new dressing applied, care being taken to expose the wound as little as possible. A few moments after the dressing had been changed, while his nurse was temporarily absent from the room, the patient got out of bed and walked about seventy-five feet to a lavatory in order to see himself in the mirror.

Two days later, on January 31, the dressing was changed again in the same manner as at first. Up to that date, from the time of the operation, the temperature had not risen above 100° and the pulse was strong. During the next two days the patient did not appear quite so well and his temperature rose to 102°. When the dressing was changed at the expiration of that time it was found that during some momentary absence of the nurse from his room, the patient had succeeded in removing the drainage tube from his side and secreting it. A new tube was therefore inserted, the side washed carefully and dressed as before. No injection was used. The dressings were renewed in a similar manner every two days for the next week, but he continued to have some fever, his temperature varying from 100° in the morning to 102° or 103° in the evening. His appetite, which had previously been quite good, failed, and he could only be induced to take a little food after considerable urging. He often complained of feeling chilly and occasionally sweat profusely at night. Everything seemed to indicate that he was suffering from septic infection. The dressing was therefore removed and the pleural cavity thoroughly washed out with a one per cent. solution of carbolic acid. The tube was then reinserted and the wound dressed as before. This operation was repeated every second day for another week during which he steadily improved. The injections were again discontinued, but the evidences of septic absorption reappearing it was necessary to resort to them again. During all this time it had been necessary to keep a constant watch over the patient day and night to prevent his disturbing the dressing.

So long as the injections were repeated every second or third day he did well, but whenever they were discontinued or neglected for too long a time he would lose ground. On the first of March the discharge had become so slight that the tube was left out and

the dressing applied as before, but a week later the sac, having refilled, discharged spontaneously through the old opening. The injections were then resumed and continued until about the first of April, at which time it was decided to dispense with the tube, the discharge having greatly diminished again. The cavity was first thoroughly washed out with clear, warm water, which had been previously boiled, then it was filled several times with a solution of corrosive sublimate, one in two thousand, after which it was again thoroughly washed out with pure water as before. The usual dressing was then applied but no tube inserted. All the remaining cavity at that time was high above the opening through the wall of the chest, making it necessary to insert a soft rubber catheter whenever it was washed out. Two weeks after the above injection was used all dressing was discontinued as the wound had completely healed. The patient has since been up about the house every day and has improved steadily, no bad symptoms whatever having appeared though six weeks have now elapsed. He has no cough, eats heartily and is gaining in weight. Percussion still shows an area of dulness over the lower part of the chest, which is probably due to incomplete expansion of the lung and to an upward displacement of the liver in consequence.

Whether or not this man will ultimately die of tuberculosis, as Dr. George G. Sears would evidently lead us to think probable (*Boston Medical and Surgical Journal*, February 25, 1892), is necessarily still an open question. Present indications would seem to justify the belief that he will live out his expectancy. So far as we have been able to learn there is no history of tubercular disease in his family.

The case seems to demonstrate the truthfulness of the following propositions: 1. That many of the symptoms which are supposed to be characteristic of pneumonitis may occur in pleurisy. 2. That whenever an effusion into the pleural cavity is found to be purulent it is worse than useless to temporize by delaying to make a free opening. 3. That excision of a portion of a rib and opening the thoracic cavity is neither a difficult nor a very dangerous operation, even when the pleural sac is distended with fluid. 4. That owing to the form and position of the ribs it is very easy to cut them with the ordinary, straight bone forceps. 5. That the opening should be made higher than the ninth rib. 6. That one is very apt to meet with unexpected embarrassments in practising surgery among the insane. 7. That it is best to use antiseptic injections after opening the pleural cavity for empyema. 8. That washing

cavities out, first with a moderately strong solution of corrosive sublimate, and afterwards with pure water may be a useful resource in cases of chronic suppuration.

CYSTOTOMY–ITS MODERN OBJECTS AND METHODS.

JAMES H. DUNN, M. D.

Recent years have wrought marvelous changes in surgical teaching and practice. Many of these mutations will doubtless remain as landmarks of true surgical progress, while we have already come to recognize in others of the so-called new methods the hand of folly and of fashion. In few fields with such ancient histories have classic teachings more rapidly and fundamentally changed than within the domain of bladder surgery. The prevailing views of a decade or two ago are longer easily recognizable in the practice of the masters of to-day. The views presented to my first class seven years ago, as a summary of the advanced teachings of the time, have been modified each year, until lateral lithotomy, then given a considerable prominence, has been gradually almost elided from the course. Indeed speaking from the standpoint of the most distinguished surgical artists, lithotomy, so long the surgeon's chef-d'œuvre has become a lost art. Says Surgeon-Major Freyer, "litholapaxy is almost universally applicable to all cases of vesical calculus, as is clearly shown by the fact that I have been enabled to perform this operation in 165 out of my latest 168 cases of stone, occurring in both sexes of all ages and conditions. During 1890 one hundred and six patients suffering from stone came under my treatment, and litholapaxy was performed in one and all of these with one death."

Major Keegan, to whom we owe the extension of litholapaxy to children, records one hundred and sixty operations in male children and boys with seven deaths, six of which could not be rightly attributed to the operation, but were rather the result of extensive organic renal disease, and he reminds the surgeon not to flatter himself because he has performed a successful lithotomy upon a boy, since the boy would have been luckier still had he been in the first instance intrusted to the care of one skilled in performing litholapaxy. As personal skill reaches in practice the high standpoint already achieved by our art we shall no longer cut for stone *per se*. There will perchance always remain cases for cystotomy in which stone exists more or less as an epiphenomenon, but the cutting will be for other reasons than

the calculus, that is either because of the concomitant circumstances or on account of want of skill of the operator with the lithrotrite. I dare say that in a surgical text-book fully up to our art lithotomy might with propriety be dropped from the index and cystotomy with propriety substituted, inasmuch as in the future the bladder will be invaded more often for other reasons than for the extraction of calculi. It is true that cystotomy is but a part of many of the operations here referred to, but it is a step of such manifold considerations and such importance, that simplicity and practical advantage might occur from a study of cystotomy, *per se*, as applied to the various disorders in which it is but a forestep, as well as to those in which it is an end. It is as convenient and as correct to treat of cystotomy apart from the various operations of which it is the first and most important step, as it is to consider laparotomy as a general procedure aside from the various specific abdominal operations.

In studying cystotomy for modern purposes we have much to forget as well as to learn. Until comparatively recent times aside from the relief of acute urinary retention, the surgeon invaded the bladder almost exclusively for the extraction of calculi, and after a long and devious following of the paths indicated probably by a mixture of chance and the teachings of the hereditary stone cutters, the influence of a revival of the Hippocratic doctrine that wounds of the bladder wall are lethal, and such other light as could be obtained, decided upon the lateral, perineal route as the highest type of the operation. And it cannot be denied that lateral lithotomy during more than a century from the time of its practical perfection from the procedures of the empirics by Wm. Cheselden, did most excellent service to mankind, yielding results of which the profession might well be proud. If we consider the results of surgery in general in preantiseptic days, lateral lithotomy with a general mortality of from 7 to 10 per cent. certainly made a creditable showing, and we may forgive those who were wont to urge in defense of the operation against competing methods, their entire satisfaction with its results. How far asepsis or antisepsis might have lowered this mortality we shall probably never know, at least from any such large tables as of yore. Nor is it necessary to further continue the comparison of perineal and supra-pubic lithotomy. Were the chief methods of removing calculi still by a cutting operation, there is little to prove that the late tendency to the revival of the *sectio alta* is more than a fashion, liable to change at the beck and call of some fortunate

popular leader. Fortunately litholapaxy in its yearly expanding application has decided that vexed point for us in a most satisfactory and decided manner, usurping nearly all the indications which formerly peculiarly claimed incision; even the impubic urethra as an objection is fast disappearing, and this by means not only more acceptable to the patients' feelings, but with a mortality with which no cutting operation may hope to compete.

Just as we are becoming accustomed to explore the bladder for diagnostic purposes by the methods of Thompson and by the supra-pubic route, the debate upon their relative advantages is somewhat silenced by the further development of cystoscopy and its revelations. The removal of this element of more exact diagnosis must of necessity modify in no small degree the choice and method of procedure in those cases which in the future will be subjected to cystotomy. Aside from occasional aspiration, a puncture for acute retention and such surgical measures as are readily effected per urethram, the chief objects for which the surgeon will henceforth invade the urinary bladder may conveniently be considered under the following categories:

1. Drainage: { Temporary. / Permanent.
2. Radical treatment of prostatic hypertrophy.
3. Exploration for more exact diagnosis.
4. Removal of new growths.
5. Extraction of foreign bodies. Complicated cases of calculous disease.
6. Treatment of wounds and injuries of the bladder and vesical neck.

Indeed in the present state of our knowledge, it often happens that from two to four of these problems are sought to be solved in a single given case, and each indication is given weight in deciding upon the most propitious method. This alone shall be my apology for calling your attention to a medley of operations under the caption cystotomy, approaching the subject just as it has appeared to me clinically. It has certainly occurred to me to operate upon a case in which the diagnosis needed clearing up, prolonged drainage was clearly necessary, a villus tumor was anticipated, but a sequestrum of bone was found. Doubtless some or all of these objects may in individual cases be more or less fully reached by several of the many ingenious methods which have been from time to time proposed, but the tied-in catheter, supra-pubic puncture and canula, urethral prostatotomy, and prostatectomy by whatever method, recto-vesical

puncture and incision, perineal puncture through the prostate (Harrison), sub-pubic cystotomy, and Dittles' newly proposed method of prostatotomy, have little or nothing to recommend them. Therefore in the interests of simplicity and utility, I believe we may safely neglect all others as impracticable or objectionable and consider only two routes for all the purposes indicated. They are:

1. Some form of median perineal incision.
2. Supra-pubic cystotomy.

At the outset it may be objected that the former is not strictly a cystotomy, to which my reply is twofold: first, the aim of this paper is rather at the practical than at over refinement of definition; second, these median operations vary considerably in extent, from a small opening in the membranous urethra, through which a drainage tube is carried into the bladder and a slightly larger external incision with digital dilation of the pars prostatica, to a partial or complete median division of the prostate with the knife; further, the deep urethra is for clinical purposes often spoken of and regarded as the neck of the bladder, and entrance to and incontinence of the urinary reservoir is practically achieved by this route.

Some experience in vesical surgery, particularly in those two classes of operations, has impressed me greatly with the fact that a diseased bladder is a wonderfully variable entity, in so much that I read enthusiastic papers with astonishment at their sweeping statements. It has not been my lot to meet with such smooth sailing either in operating or in the afterwards perfect itinerarium of the patients as one might expect from some reports, for example, of those who write of the supra-pubic cystotomy as an operation scarcely more difficult than tapping, and who manage the permanent drainage with a tube almost as handily as the normal urethra. With me the ease with which the supra-pubic operation was done as well as the control and management of the subsequent drainage has varied exceedingly in different cases. Twenty perineal and seven supra-pubic operations leave no doubt in my mind that the former incision of whatever extent is *per se* not only in general exceedingly more easy of execution, but an operation of far less magnitude to the patient, as well as more quickly and comfortably recovered from.

In considering our first indication, drainage, I apprehend that surgeons are inclined on first thought to carry their analogy of the bladder and the abscess cavity too far, and apply the laws of hydrostatics too rigidly. In a bladder requiring

drainage there is no real likeness to a pus cavity whatever. A pus cavity is not an inflamed, hollow, muscular organ, and by so-called bladder drainage physiological rest is more often meant than drainage. It is only in the atonic bladder that avoidance of stagnation takes precedence of physiological rest, and this is clearly as easily siphoned or washed out above the pubes as below. Here the lowest opening does not tap the lowest point of the viscus any more than the *sectio alta*. When a bladder most needs rest for any great length of time, I have found the median perineal section, unless the prostatic muscle is nearly completely severed, to be very unsatisfactory as compared with supra-pubic cystotomy, for the very good reason that voluntary power is often at once, always very soon regained, and the presence of a tube is necessary to secure incontinence. You all know the distress caused by lodging permanently a foreign body within a sphincter muscle, and this tube resting upon the most sensitive part of the urinary tract, has always, in my experience, excepting only atonic bladders already powerless to contract, caused more or less distress, and in some cases so severe as to demand removal, and in most patients it is borne only with complaint. Hence so far as thoroughness of so-called drainage is concerned I have no hesitation in saying that the supra-pubic is incomparably most efficient, especially if it is to be long continued or permanent. On the contrary I think there can be no cavil that the wound drainage is rather better in the perineal route, and in the first days until granulation has placed a barrier to infiltration and absorption, gives the surgeon less concern than the supra-pubic incision. After reading the many glowing accounts of supra-pubic drainage, but finding it in some of my cases a very nasty mess, I have been comforted to read in so good an authority as Mr. Treves that if the wound in the bladder has been left open "the after treatment becomes very tedious and demands infinite care; and that the various siphon drainage tubes are delusions and snares." The annoyance of incontinent flow while the patient is confined to the bed and house have in general been less to the patient, and more easily controlled, in the perineal incision; but a permanent drainage or one of many months' duration is in general more endurable above the pubes. The few cases in which this is uncontrollable and irritates the abdominal skin, being more than counterbalanced by the at least equal annoyances of a perineal tube, in a yet greater number of perineal cases, when the patients come to get about. Hence I think the rule may be established thus: prolonged, permanent and thorough drainage is best

secured by the supra-pubic method; brief and less perfect drainage by the perineum, and when it is desired to be much prolonged or the organ is very irritable, the prostatic fibres must be either pretty freely divided or markedly over-stretched. Bladder drainage comes to our consideration under three aspects:

1. As supplementary to the surgical treatment of other affections, e. g., foreign bodies, complicated cases of calculous disease, prostatectomy, and so forth.

2. As a means of cure of cystitis.

3. As a palliative measure in several painful and often incurable affections, such as malignant and tubercular disease.

Vesical tuberculosis is admittedly rare as a primary affection, but I met with a case some four or five years ago in which I could discover no other deposits than those at the base of the bladder, and which was greatly benefitted by four weeks' perineal drainage. In such instances it does not seem more unreasonable to hope for cure than in other strictly localized forms of the disease, and while the perineal drainage often palliates, it seems that the supra-pubic is in every way more desirable. It gives better physiological rest, may be greatly prolonged or in hopeless cases made permanent, with less trouble to all concerned, and the base being so generally the point of the ulceration, a perineal tube is badly borne, and direct topical treatment of the disease may be carried out in some measure, though as yet it must be confessed but imperfectly. I should think it might be laid down as the rule in vesical tuberculosis that the drainage should be supra-pubic.

Attempts to radically relieve the lot of sufferers from enlarged prostate have of late become frequent. The works of Watson, Bellfield, McGill, Keyes, and many others, have thrown much light upon these cases, and give great encouragement to this rather uninviting procedure, which unfortunately often combines a severe operation with an aged patient, commonly already much damaged in his vital organs. Watson concluded that anatomically two-thirds of the cases of prostatic hypertrophy are operable through the perineum, and that clinically this operation is the safest. Bellfield advocates the combined supra- and infra-pubic. The other authorities mentioned and recent operators in general, seem to show a preference for the supra-pubic. Whether this preference is wholly based upon just considerations or partly influenced by the revival of supra-pubic operations "because any one with a knowledge of anatomy and unprejudiced by experience would naturally choose it as the most rational route to the bladder," is perhaps not yet

fully settled. But greater room, more direct view and control of the field of operation, and wider applicability to cases not suitable to the perineal method seem to justly render it the favorite.

There are certainly a good few cases in which a median obstruction has been and can be again easily and radically overcome by the perineal incision, and I believe more accurate means of diagnosis, such as the electric endoscope and cystoscope, will enable us to select out with great accuracy those cases in which the perineal incision is ample, and in these where the perineal distance is not too great to be readily passed with the finger, and more especially if the bladder be small and contracted, the perineal method should be chosen as in every way in the patient's interests. First, as less mortal. Second, as more quickly healed. Third, as less troublesome to patient and attendants in managing the drainage.

It would seem of the greatest importance to decide this point before proceeding to operate, for while it is very easy to supplement a supra-pubic incision by the boutonniere, it cannot fail to be apparent to any one that a preliminary perineal incision renders an immediate supra-pubic with modern technique exceedingly difficult. Hence Watson's proposition to first open the membranous urethra, put in the finger and explore, and finding the perineal distance too long or the form of median enlargement unmanageable, to proceed to the supra-pubic incision, does not appear just or practicable, since it will in most cases have materially interfered with such a distension of the bladder as admits of the high operation at its best. Of course I do not deny but that it can be done, only that it is usually accomplished with difficulty and with such disturbance in the prevesical space as adds unpleasantly to the dangers of the supra-pubic incision. While I have not heard the expressions of others upon this point, I apprehend that this uncertainty of the find until an obstacle has been placed in the way of the alternative procedure has induced many an operator to at once open above, when, had he known as much before as after inspection, he would have operated below with profit to his patient. I have at least found myself in this predicament on one occasion. This being the case greater precision in diagnostic methods will doubtless lead to the perineal incision in some cases now opened above.

As to the third indication for these operations, viz: exploratory incision for more exact diagnosis, the growing use and skill with the cystoscope almost reduces the necessity for such

a precedure to a minimum. When the great good and comparatively little harm of exploratory operations in careful hands in the various fields of operative surgery is remembered, it is not always just to cast aspersions upon those who make their diagnosis with the knife. Indeed but for the frank boldness of those who when in doubt admit their ignorance and cut down for an anatomical diagnosis, surgical progress could not have been what it has been during recent times. And yet when skill and invention place other means in our power it were criminal negligence to establish certainty by dissection, which could by greater skill be achieved without. I have found two classes of cases in which the cystoscope is unavailable. First, those in which persistent hæmaturia obscures the view. Second, those in which the bladder is so irritable that instruments are not tolerated. How frequent the latter objection may obtain, I cannot say. It would seem that most cases at least under an anæsthetic could bear the necessary amount of fluid and manipulation for a successful examination, but in two instances I have been unable to so anæsthetize the individuals as to prevent a constant muscular tremor, and a resentment of fluids and instruments by the bladder such as to render all attempts at successful cystoscopic examination futile. It seems probable that in spite of the exact means now at our disposal instances will present in which we shall still have this element as a side issue in operating.

It must be admitted that there are small bladder tumors which if clearly diagnosed and located by cystoscopic examination admit of expeditious removal by perineal cystotomy. But when there is doubt of the practicability of such treatment the suprapubic incision should clearly be chosen. Here as in most other operations preparatory to which invasion of the bladder is necessary, there is much difference of opinion and it would seem the divergent sentiment is owing largely to the element of uncertainty as to the exact condition present, though the bias, character of the individual experience, etc., may cut some figure. It would seem that if all operators could by touch or sight know as much before operation as after, there would be less difference of opinion in a given case as to the route to be chosen. For as Harrison truly remarks, "of all the contingencies an operator has to calculate upon and provide against, the most embarrassing is the conciousness that he may find such disposition of the parts as to render a completion of the contemplated precedure impossible." The truly great opinion of Sir Henry Thompson in favor of the perineal method, seems to be based upon the rea-

soning that this operation is far less severe on the patient, that most cases in which removal is practicable and advisable can be thus treated, and that "it has afforded that most important element, an exact diagnosis." While the few in which the perineal route is found inadequate may be supplemented by the supra-pubic. Guyon and many others have taken the directly opposite view, and claim that the supra-pubic operation should always be made for vesical tumors. No one will, I think, doubt that could these two authorities see the interior of the bladder before proceeding to operate, cases appropriate to each method would be found. It is well established that vesical tumors may often be seen and located by the cystoscope, although for reasons already given, it is probably less practicable in tumors than in most other conditions on account of the hemorrhage so generally present in these growths.

One cannot review Thompson's cases without feeling that some of the many partial removals could have been dealt with more thoroughly, and some of those in which he notes great hemorrhage could have been better staunched by the primary supra-pubic incision. Yet other of his cases show as clearly that some pedunculated and small growths may be radically and expeditiously removed by the lesser operation. May we not hope that cystoscopy will reach such perfection that all these uncertainties may be removed before operation, and each method receive only the cases to which it is adapted. Surgeons, not unlike other people, differ most when wholly or partially in the dark. In cystotomy for the extraction of foreign bodies, naturally most depends upon the size and character of the offender and the accompanying state of the bladder. When the peccant body is small and not greater in its lesser diameter than that of the index finger, particularly when the bladder is contracted, complicated by deep stricture, or the perineal distance has not been greatly increased by prostatic hypertrophy, there is every reason to select the perineal route, and only insane obstinacy in fixed ideas could lead one to choose the supra-pubic. The operation is ample, less severe, simplicity itself in execution, in general more rapidly recovered from, with less annoyance to the patient and less anxiety and care to attendants. On the contrary when the diagnosis cannot be fully cleared up, when the offending body can probably not be extracted without inflicting trauma upon the prostate and neighboring parts, when there is extensive general enlargement of the prostate unduly increasing the perineal distance beyond the length of a digit, when there is marked sacculation and deep post prostatic

or a post trigone pouch, the supra-pubic method is in general the better procedure, as it insures against probable or possible failure by the other, ensures the completest possible dealing with all the conditions present, and secures the best cleansing and drainage of a cavity in whole or in part incapable of complete contraction.

Penetrating wounds of the bladder, particularly such as involve the peritoneal coat are almost always complicated by other serious injuries to neighboring viscera, and the treatment so far as this viscus is concerned involves no principles other than those applicable to cases of vesical rupture, ulcerations and perforations. In rupture of the bladder the rent is commonly found on the posterior surface midway between the summit and base, and prompt laparotomy with Lambert suture is admittedly the only treatment worthy of consideration. But whether the teaching of McCormick, Treves and others who condemn any further interference either by perineal drainage or retained catheter is to be regarded as final or not may seem doubtful. There can be no doubt that when the suture is perfect and healing without accident results, no further precautions are necessary. However, if it can be shown that an additional safeguard is placed between the almost necessary fatality of a defect by so slight an operation as the simplest form of boutonniere drainage, surely the man who prefers prudence to pride in demonstrating his capacity with the needle will not fail to use it. This question would seem to resolve itself into this: Is the necessary perineal tube by its irritation capable of interfering with the best course of the bladder suture? In the large and fairly healthy bladders such as are most liable to rupture it would seem not; and unless experience shows the contrary, I should think the patient should be given the benefit of this apparent additional security. Indeed it is claimed that intra-peritoneal rupture of this viscus has been successfully managed by a tied-in catheter alone.

In ruptures and perforations of the neck of the bladder and urethra posterior to the cut-off muscle, the course appears to be clear as daylight; for though persons often do escape from such accidents with their lives though in a more or less badly crippled condition, in immediate perineal cystotomy lies the surest rescue from death, from the suffering of urinary infiltration, and from the most troublesome forms of stricture with its lifelong burdens and ultimate dangers.

Thus the object of this discursive paper has been to call out discussion upon the chief principles of bladder operations

in general, which are liable to be lost sight of in the enthusiasm for individual methods in specific operations. To demur against cutting operations for stone, *per se*, in a time when a far superior method has attained a degree of perfection unparalleled in the history of any capital operation not even excepting ovariotomy. To demur against the tendency to supra-pubic cystotomy in cases which might be properly managed by a less capital operation. To demur against the popular inference that the supra-pubic is the royal road to the bladder, always as easy of performance, conveniently managed and as rapidly recovered from as the infra-pubic. To insist that by cystoscopy we are in a great majority of cases enabled to so complete the diagnosis as to know in advance which operation will be ample. To insist that the bladder is a variable organ upon which to operate, and that under some conditions its invasion above the pubes is remarkably easy, in others more difficult, in a few practically impossible with any respect for results, and that many elements must be carefully considered, among which, of course, the temper and distensibility of the organ, the perineal distance, and the exact character of the work to be done as well as the after needs of the organ are of paramount importance. And to remind of the perhaps trite precept that the median perineal cystotomy is *per se* as compared with the supra-pubic a minor operation. It is really a mystery how any one can forget that in those cases in which it is ample, the supra-pubic is not to be thought of. When authorities become advocates of different methods, their eloquence is apt to blind the inexperienced. In dealing with a subject the ends of which are with perfect justice treated by two very different methods, with a long and shadowy midway unpenetrated by the electric light, it is only to be expected that advocates should arrange themselves as far apart as possible and fit their arguments to their respective ends. May we not hope that the line will be, in the future, pretty sharply divided, and to the lesser operation will be allotted the work which it can thoroughly do, while against the greater risks of the major operation will be set the greater relief from graver forms of like affections?

NASO-PHARYNGEAL ADENOID HYPERTROPHY.

EDWARD J. BROWN, M. D.

The experience of the past year has only strengthened the views expressed in a paper, read before this Society one year ago, relative to the supreme importance of nasal and na-

so-pharyngeal disease, in their causative relations to disease of the eye and ear.

Much has been written on the subject during the year, and there are few well informed physicians who now question its importance. Daily experience however shows that the facts need to be still further emphasized in this community.

Whatever the office or offices of the glandular tissues constituting the faucial, lingual or naso-pharyngeal tonsils may be in a healthy child, it is certain that in such children as, through some constitutional vice, have hypertrophied forms of this tissue, it is a more or less serious evil. Whether it be true as Bosworth has lately claimed that the presence of a tonsil is of itself a disease, or not, it is certain that healthy children do not have such glandular tissue sufficiently developed to cause obstruction, or in case of the naso-pharyngeal tonsil, to be hardly discoverable. The fact that a considerable proportion of children do present such growths in more or less prominence, simply proves that a large number of children are the subjects of some constitutional vice. And how many children in this day and generation are free from such vice, either inherited, more or less remotely, or acquired in consequence of defective alimentation or other vicious hygienic conditions?

Every observer of infants has seen, in apparently healthy subjects, the development of a disposition to the snuffles, hardly noticeable except in damp weather or when the room temperature becomes lowered. The child ordinarily keeps the mouth closed, breathes perfectly and has no nasal discharge; and yet at times gets stuffy, and while sleeping quietly with lips tightly closed, will sometimes give a little snort, half awaken and then settle back again to quiet sleep. What is the explanation of the phenomenon? The child has an excessive development of glandular tissue at the vault of the naso-pharynx; ordinarily he has room to breathe, but in damp weather with a low barometric pressure, these spongy tissues become engorged with blood, occupy excessive space, and obstructed breathing results. This is the history of an apparently healthy, well-nourished infant of eight months, which I have had the opportunity to observe closely since his birth. He has no faucial tonsils worth mention and is in every way as healthy an infant as one often sees. This boy's naso-pharyngeal vault was curetted with immediate relief of the symptoms and without the slightest ill result.

I believe this to be a typical case of a beginning nasal and naso-pharyngeal catarrh in a so-called healthy child, such a case as under fairly favorable circumstances would develop into that

form of nasal catarrh which we find constantly in persons who deny that they have a catarrh, and is yet of sufficient gravity to induce abnormal changes in the middle ear. Bosworth admits that an acute cold in the head in a healthy infant is simply an inflammation and swelling of the pharyngeal adenoids, obstructing the posterior nares, a condition the frequent repetition of which would naturally induce the change which we find in simple or mild hypertrophic rhinitis. Such a theory of the causation of most cases of hypertrophic rhinitis seems far more reasonable than Bosworth's mechanical theory of antecedent traumatism. Under unfavorable hygienic conditions, which always favor the development of low forms of glandular hypertrophy, these glands will become sufficiently enlarged to cause constant obstruction to nasal breathing, and the more marked cases of hypertrophic rhinitis are the result.

In decidedly scrofulous children we find with this excessive growth of glandular tissue a damming up of the naso-pharyngeal secretions, and as a result of the nasal tissues being constantly bathed in an abnormal, irritating secretion, a muco-purulent rhinitis is developed with polypoid thickening and degeneration of the middle turbinates, and atrophic ozœna as the final stage.

Of the various deformities of the nose and face, the high arched palate and the chicken breast, all resulting from obstructed respiration, and most of them primarily from pharyngeal adenoids, so much has been written that it seems almost unnecessary to mention them. The following case would however seem to prove the contrary:

Dr. —— brought me his young son for treatment of his myopic eyes. I told the father that the boy's nose and throat urgently needed attention. Was informed that a well known throat specialist had that matter in hand. Two years later the boy was brought to me for an examination of his nose and throat, as he was unable to breathe well and could not sleep at night. I found hypertrophic rhinitis, extensive deformity of the nose and face and large masses of adenoids filling the pharyngeal vault. The throat specialist had nicely burned out the faucial tonsils, but had neither treated nor mentioned the most important element in the case. The boy was promptly relieved by the removal of a mass of glands the size of the first joint of my thumb.

The three following cases show the harmful influence of naso-pharyngeal adenoids upon the eyes:

Bessie A., 3 years old, was referred to me by Dr. J. W.

Byrnes, having a small, superficial ulcer with vascularity of the upper fifth of the right cornea. There were remains of former ulcerations of the left cornea. Photophobia and blephoro-spasm were prominent and troublesome features. The child's mother had died of phthisis, the little one had never been well and was now in wretched condition. Of course there were naso-pharyngeal adenoids and a nasal discharge.

Yellow oxide ointment and hot fomentations locally, with calomel, cod liver oil and nourishing food, together with cleansing of the nasal passages, were prescribed.

As the improvement was not satisfactory at the end of one week, I etherized the child and curetted the pharyngeal vault. The following day a remarkable improvement was observable and on the third day the eyes were nearly well.

The following case is remarkable as showing the influence naso-pharyngeal disease may have upon the blood supply and functional activity cf the retina:

Walter C., 10 years old, an otherwise healthy country boy, with good family history, was brought to me from a distant town in the summer of 1891. His parents had noticed for some four or five years and more especially the past year, that the child could not see as well at night as other children. He had suffered from profuse nasal discharge and from purulent otorrhœa, the latter having ceased under home treatment which I had prescribed several years previously.

Vision was 15-40 + in each eye, not improved by lenses. The visual field of each eye was reduced to 15° laterally and 10° above and below. Examination of the eye gave a negative result, save the suspicion that the retinal vessels were smaller than normal. Examination of the nose and throat revealed large masses of adenoids, greatly swollen middle turbinates, a profuse muco-purulent nasal discharge and mouth-breathing.

The adenoids were removed, as well as large masses from the swollen turbinates and a cleansiug wash was ordered. I saw the child again in four weeks, and found a remarkable change. In the right eye nearly all the temporal half of the field was normal; none of the nasal half was contracted to 30° and most of it ranged from 45° to 55°. The left field was nearly as good.

The boy said he could see much better, but the test letters revealed no improvement of central vision. He was then given a month's treatment of the nose and throat with the application of galvanism to the eyes. At the end of that time there had

been slight improvement of the vision fields, and central vision had risen from 15-40 to 15-30. The fields were so remarkable that they were taken repeatedly and with such care as to exclude the possibility of error. Later reports from the parents do not indicate further improvement.

In October last, Mrs. B., 27 years old, wife of a medical man, came to me complaining of constant headaches and of having had a mist before the right eye for the week past. Vision, R. 15-15; L. 15-10. Both improved by weak +- cylinders; the same under homatropia, and the correcting lenses were ordered, no other cause of the disturbance being discovered as far as the eyes were concerned. Mrs. B. was dyspeptic and in generally bad condition, and the pharyngeal vault contained large masses of adenoids. Treatment of he throat was declined. The glasses ordered failed to relieve the eye symptoms.

In January Mrs. B. had an attack of influenza which left her more reduced than ever and with a most distressing paroxysmal cough. I advised her husband that the cough would probably be relieved by the removal of the adenoids. I removed the latter on March third, and five days later Mrs. B. reported that there had not been a single hard paroxysm of coughing since the operation; her cough was nearly well, and strange to say she was able to wear her glasses with comfort. In May Dr. B. reported that his wife was greatly improved and weighed more than ever before.

This case and the one following show the folly of prescribing cough mixtures without first having examined the throat, the most common location of the source of irritation.

Carrie K., 7 years old, had had a bad cough for two months. A homœopathist had treated her most of that time for bronchitis, but with little if any benefit. She was then taken to one of my friends at a dispensary, where her dyspepsia (possibly the result of two months' homœopathic dosing) was prescribed for, and the suggestion made that the cough was due to the stomach trouble. I found hypertrophied faucial, lingual and naso-pharyngeal tonsils. The removal of the latter promptly cured the cough.

The cases I have mentioned are a few among the many that have impressed upon my mind the supreme importance of this subject. No intelligent specialist, certainly, and I wish I might say, no intelligent general practitioner, will in 1892 overlook or neglect marked cases of adenoid hypertrophy. What I especially desire to emphasize in this paper is the importance of

attending to those cases that are not marked by severe symptoms. If, as Bosworth claims, and as I firmly believe, the presence of hypertrophied masses of glands in the region of the faucial arch is the expression and evidence of a systemic dyscrasia, whether we call it lymphatism, scrofula or something else, such growths should be regarded as pathological, and should be promptly removed whenever they cause symptoms and before they have done irremediable damage.

Bosworth believes that iodide of iron in large doses is a specific in infant subjects of lymphatism, and will prevent the development of such hypertrophies. Some infants cannot take iodide of iron, and in such I believe there is nothing as good in the way of medicine as one of the chlorides of mercury and cod liver oil.

When the slightest obstruction occurs from these glands they should be removed. Even in young infants the operation may be done easily and safely by means of Gottstein's small curettes. I have used the latest pattern of these curettes for the past two months with great satisfaction. Any other treatment than removal is simply a makeshift and an abuse of the patient's confidence.

POTT'S DISEASE WITH SPECIAL REFERENCE TO TREATMENT IN THE UPPER DORSAL AND CERVICAL REGION.

ARTHUR J. GILLETTE, M. D.

My excuse for writing upon this seemingly almost threadbare subject is that the unsightly deformities which one meets every day in every land in every climate among all nations are sufficient proof that there must be some change in the routine treatment of these cases.

I use the term routine advisedly, as nearly all practitioners seem to think there is the one treatment for Pott's disease, whether in the beginning, or after deformity has taken place, in tha lumbar or dorsal regions, when paralysis occurs, in infancy, childhood, adolescence or adult life—and that that treatment is the plaster of Paris jacket. With this exception a few general surgeons are anxious, when paralysis occurs, to dissect their way to the spinal cord, with the usual result, when most satisfactory, of obtaining a perfect union of the dissected parts.

I do not wish to condemn the plaster of Paris jacket, for it certainly has its uses, but rather the indiscriminate use of it in

the treatment of caries of the vertebræ, and also its improper application.

There is a misapprehension that the deformity is partly obliterated by suspension; there is a certain amount of lengthening of the spine produced, but it is obtained mostly by the obliteration of the physiological and compensatory curves, and not by any decided change in the pathological curve.

If it were possible to separate the diseased vertebræ it would not be desirable, because it would separate the diseased surfaces and leave a gap between them which must be filled by some solid material before any weight-bearing function could be resumed by the column. On the contrary, it is desirable that the diseased surfaces be kept together, if undue pressure can be overcome and reduce the pressure from superincumbent weight as far as possible, which crowds together the inflamed and softened vertebræ. Of course I refer now to the beginning or inflammatory stage.

If it were possible to separate the diseased parts by suspension the plaster jacket does not fulfil the office designed for it in keeping up this extension, for in small children the abdomen and thorax are much larger than the pelvis. The theory which shows it grasping the pelvis is very good in emaciated adults but does not prove true in children, especially in those with extremely large abdomens, a condition so often found in tuberculous children.

The plaster jacket does not support the weight of the shoulders above its axillary portion. The jacket is always cut out to allow free movement of the arms, as the patient cannot suffer so much pressure in the axilla. If it were bearable it would not be advisable, as I have seen two cases of paralysis of the arms from axillary pressure.

There are many instances where the plaster jacket is improperly applied. The most common error is that in suspending the patient he is raised completely off his feet. This is not the idea of its originator, for Dr. Sayre himself says: "The patient is to be slowly and gently drawn up by means of the apparatus until he feels perfectly comfortable and never beyond that point."

The plaster of Paris jacket is often allowed to remain on for months without ever being removed, or the body beneath it in any way cleansed. Neither is this Dr. Sayre's treatment, for he advises dampening a towel with bay rum or cologne water and with a long whalebone push in one end of it from the sternum to the pubes, and then taking the two ends in either hand,

drawing it up and down completely surrounding the body, thus keeping the skin clean and in a more healthy condition.

I have never seen a plaster cast with a jury-mast applied, yet I have had a number of cases sent to me with the disease in the mid-dorsal region and above it, where the doctor stated that he had been employing Sayre's treatment, yet Dr. Sayre advises the jury-mast at or above the mid-dorsal region.

Fig. I.

Fig. I is a case which came to me said to have been treated by Sayre's method, plaster of Paris being applied only to the axilla.

Fig. II is another case in which the support extended to the axilla only. A short time ago when I presented a sole leather jacket and claimed for it the merits which I thought were due it, I showed also at the time a modification of the Taylor splint. A surgeon present remarked that he did not believe there was anything superior to the plaster of Paris jacket. I answered

Fig. II.

that in many cases you could not use the plaster jacket, and in reply he stated that his authority that the plaster of Paris jacket was far superior to any other form of treatment for Pott's disease was Dr. Sayre, and that he (Dr. Sayre) never emyloyed anything else. I was surprised to find that this idea prevailed among all those present and with every surgeon with whom I

have spoken regarding it. I therefore wrote to Dr. Sayre, and in answer he referred me to his second edition of lectures on orthopedic surgery, and also sent me a reprint of a lecture delivered before the New York State Medical Association as far back as Nov. 20, 1885, in which I find the following:

"This treatment, the application of the plaster jacket, of course only applies to those cases where the pelvis is sufficiently developed to afford a support to the jacket upon the iliac crests. There are cases, of course, where the jacket cannot be applied owing to the lack of development of the pelvis in very young children. In such cases the child should be placed in the wire cuirass, with head extension."

The encircling of the body in any solid support prevents the surgeon from having the opportunity of carefully inspecting the progress of the disease. Ulcerations or abscesses may form without his knowledge.

A patient visited my office while I was preparing this article, wearing a plaster of Paris jacket. On removing the jacket I found a button almost completely buried in the flesh.

No modification of the plaster jacket is possible without its complete removal and the application of a new one.

Another mistake in applying the plaster jacket and a misfortune to the patient is that of using too many bandages. I saw one a short time ago which was over an inch thick. But the direct opposite of this is the usual failure, that is, a jacket not thick enough to give any support whatever. I removed a jacket but a few days since which was certainly admirable in its application and fit, but the patient had complained of pain over the apex of the gibbus and the doctor had removed about a square inch of this portion of the jacket allowing the deformed spine to protrude. No comment is necessary.

One of the most absurd things occurring in the use of the jacket that I know of was suggested to me by a prominent surgeon, that of allowing the patient to go about a few days after a jacket was removed before the application of the next, he said to allow the patient to get free use of his muscles and improve the condition of the skin. The harm he would do himself in those few days by going without support would more than counterbalance all the physician had gained in three months.

In short, according to its inventor, the plaster of Paris jacket without the jury-mast is of service only in the lower dorsal and lumbar regions, and I cannot see that it is in any way superior to a properly made and well fitting sole leather jacket, which can be made and applied with the same exactness, more com-

fort, is much cleaner, can be removed and the patient's body thoroughly bathed, and is superior in the one quality for which so much is claimed for the plaster jacket, that of simplicity in

Fig. III.

its application and of cheapness, if the surgeon's time is considered of value.

But I wish to call your attention more particularly to the treatment in the upper dorsal and cervical regions, which are

more difficult to immobilize, and where the greatest deformity occurs, and consequently the greatest mortality.

I believe that in the mid-dorsal region where it is improper to apply a plaster jacket without a jury-mast a modification of the Taylor brace will suffice, for it extends beyond a point opposite the axilla where the ordinary jacket terminates to about the nape of the neck, and grasps the shoulders throwing them back and thus prevents their drooping forward, thus causing greater pressure upon the anterior segment of the diseased portion of the column, for as the shoulders droop forward and the ribs sink downward, the greater becomes the weight and forward leverage on the diseased portion of the column, and while the ordinary and necessary movements of the arms are not to any extent restricted, the direct forward reaching movements are entirely prevented. (Fig. III).

In place of the plaster jacket and jury-mast for the upper dorsal and cervical regions, I find a very cheap and agreeable support in the leather jacket with a jury-mast attached.

One of the easiest ways in children to obtain a cast from which to have the jacket made is to suspend the patient from one chair to another, that is, have him lie face downward with the extreme upper part of the chest, shoulders and head resting on one chair, and the legs and thighs on another. This will lordose the spine, thus throwing most of the pressure on the posterior segment of the spinal column. It also has its advantage over the Sayre suspension in that the little patient or its mother is not nearly so frightened. (Fig. V*). The greatest advantage is that it is much easier for the surgeon to apply the plaster and the patient can remain in this position until the plaster is thoroughly hardened. This jacket I then remove, and from it have a leather jacket made which laces up in the front and have a jury-mast applied. (Fig IV).

But I must say that even this treatment has not been to me entirely satisfactory and in all cases when I have resorted to recumbency I have obtained the very best results.

I call to mind a young man suffering with tuberculous ostitis of the dorsal vertebræ where the plaster jacket, Taylor brace, in fact every form of treatment produced no amelioration in the symptoms. A hacking cough, loss of appetite, extreme emaciation, contraction of the psoas muscles and night sweats led me to fear general tuberculosis, and I diagnosed a psoas abscess. The knee reflex was very much exaggerated and I prognosticated

*The cut does not show the position correctly. Chairs with hard seats should be used instead of padded cushions as represented here.

Fig. IV.

paralysis, which in less than a week proved true, and then the treatment which I had urged and the family, patient and family physician objected to was obligatory, that is, recumbency. From the first twenty-four hours after the young man went to bed he showed marked improvement, and after five months of recumbency, not allowing him even to move to attend to the calls of nature, he had so improved as to be perfectly free from pain, could walk well, in fact walked nearly half a mile to school and then up three flights of stairs, and his weight had increased thirty pounds.

Fig. V.

Another case referred to me by Dr. Quinn, of this city, showed laryngeal stridulous breathing, considerable enlargement of the neck, head held perfectly rigid by neuro-muscular symptoms, general health very much interfered with, high temperature, swelling of neck, difficult deglutition, and examination through the mouth revealed a tumor in the upper pharyngeal region. We diagnosed tuberculous disease of the cervical spine with a post-pharyngeal abscess, and advised rest in bed with extension over the head of the bed from the chin and occiput. After six months we discharged this man relieved of all his symptoms except the slight deformity of the vertebræ. I had the pleasure of seeing him but a few days since employed in a blacksmith shop, and his report of his case was even more flattering

if possible than when we first discharged him. I have a number of cases along this line of treatment, but these are the most eloquent testimonials of the efficiency of the treatment by dorsal decubitus.

Dr. A. J. Steele, of St. Louis, sent me a reprint upon "Recumbency and Head Traction for Pott's Disease" in which he uses the following head traction frame: It is a canvas covered iron frame with occipito-mental traction straps attached to uprights at the head of the frame, a broad band passing around the pelvis and frame, and shoulder straps also attached to the canvas; thus is the body secured against motion, the limbs only being movable. The head of the crib or bed in which this frame is placed is elevated about eight inches, thus causing the weight of the body to act as an extending force while counter traction is made on the head. Thus by recumbency is removed the superincumbent weight from the crumbling vertebræ, immobilizing the spine, and by traction overcoming the irritated muscles. A small, child's bed pan can be used for defæcation. (Fig. VI).

Fig. VI.

It may be argued that confinement in these cases of tuberculous diseases is injurious, but the answer to this argument shows the superiority of Dr. Steele's stretcher splint, for the little sufferer can be carried out for fresh air, sunlight and change of scene. The stretcher can be placed in a baby carriage and wheeled about.

Dr. Steele adopted recumbency with head traction about three and one-half years ago, and in conversation with him his results from this treatment were very satisfactory.

*"In the treatment of spinal affections, mechanical problems present themselves that are sometimes exceedingly difficult. The various segments of the spinal column differ not only in their relations to each other, but also in their relation to surrounding parts, which modify their function in health and demand consideration in disease. It is only by a careful study of *all* existing conditions, from an anatomical, physiological and mechanical standpoint, that we can intelligently and successfully treat antero-posterior curvatures of the spine."

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*Buffalo Medical and Surgical Journal, February, 1890, by Louis A. Weigel, M. D.

DISCUSSION.

The following is the discussion on the paper read by ARTHUR J. GILLETTE, entitled

POTT'S DISEASE WITH SPECIAL REFERENCE TO TREATMENT IN THE DORSAL AND CERVICAL REGIONS.

Dr. MOORE: I will only take a minute's time. I believe Dr. GILLETTE has named all the particulars and I wish to endorse the treatment in bed, particularly in adults. I will say that I treat many cases of Pott's disease in adults in bed. I find that head traction is not necessary as they are old enough to understand the necessity of carrying out your instructions. I place them on as solid a hair mattress as I can get, having them lie there without turning, and allowing them to get up for nothing. I have had patients that were emaciated in the extreme and suffering intense pain, relieved in this manner in the course of a few weeks. I have had them gain as much as forty pounds in two months after going to bed, and I must say that when this treatment was first suggested to me I was very much opposed to it because I thought the confinement would be very bad for the patient. I find that I was entirely mistaken in the matter, that the patients bear confinement well, and that they improve infinitely better under confinement in bed than they did with the brace. The brace does not give them the support that they need. I am speaking more particularly of adults, and in cases of children it is certainly best.

Dr. DUNSMOOR: The paper on the program to be read by Dr. MCDONALD, will be deferred for the present, and the doctor will make a few remarks at this time.

Dr. MCDONALD: Unfortunately I have been unable to complete my paper, owing to an accident which has rendered me unable to work for nine weeks, but as one of the patients referred to in that paper has come here this afternoon, I take the liberty of showing him to the Society. He is fifty years old and for twenty-nine years has been suffering apparently with suppuration from the kidneys. A number of years ago he passed a very large stone by the urethra measuring an inch in circumference and one and one-quarter inches in length. This suppuration had gone on for a long time, and when he came to me a little over a year ago, I diagnosed his case as one of stone in the kidney and removed about forty small stones of the size of barley seeds. The suppuration seemed to continue, however, and was of this character: He would have a severe attack

of pain lasting a variable length of time, a few hours or days, and this would be followed by a gush of pus in the urine. On the twenty-third of December last, after consultation with Drs. HOEGH and HUNTER, and assisted by them at the operation, I removed the right kidney, and from that time until now he has been living with the left kidney alone. At the later operation, for removal of the kidney, I followed the same incision as that made at the nephrolithotomy six months before. The quantity of urine passed by him during the few days preceding the operation was about thirty-one ounces. The day after the operation he passed twenty-nine ounces, and in a day or two, for the first time in twenty-nine years he passed clear urine. He is now, as you see, a fairly nourished man in fairly good health. Unfortunately he had fallen into the habit of taking excessive doses of morphine, and he still suffers from that to a certain extent, although the quantity he now takes is very small compared with that which he took a few years ago.

Dr. HOEGH: I want to ask the doctor if he could not have been cured by draining instead of removing the kidney. I would like to know what his reasons were for removing the kidney instead of draining it.

Dr. MCDONALD: The wound was drained, and drained so long that I feared a permanent fistula. I therefore concluded that everything had been gained that could be expected from drainage and that a thorough, radical operation of removing the diseased kidney was the only chance by which he might be restored to anything like health. I think it was a case where the disease had continued so long, where the suppuration was so confined and persisent, that drainage was of no utility. It had been thoroughly tried in the first instance and failed.

Dr. HOEGH: I want to know if the doctor drained from the pelvis of the kidney or simply from the space behind.

Dr. MCDONALD: I drained from the pelvis of the kidney.

Dr. ANDREWS: Is he now passing the normal amount of urine?

Dr. MCDONALD: Yes, I believe he is.

Dr. HOEGH: I did not ask the question because I wished to criticise the doctor's method, but because I was criticized myself for draining from the pelvis about a week or two weeks ago. I think it is a rational method because we can never be sure that all the little fragments are removed, and I think by keeping the drainage tube in there it gives the fragments a chance to escape.

Dr. MCDONALD: In this case the abscess of the kidney was very large and filled the pelvis. The pelvis was extended to a size sufficient to hold your clenched hands.

Dr. DUNSMOOR: Were there any pieces of stone left at the second operation?

Dr. McDONALD: None whatever.

Dr. DUNSMOOR: There was no stone removed at that time?

Dr. McDONALD: None whatever. It was purely suppuration.

Dr. MOORE: I think it is the general belief among surgeons at the present time that too many nephrectomies are being performed. Those of us who have removed kidneys have sometimes found that while we thought the kidney was utterly destroyed before the operation was attempted, in washing it we afterwards found there was still a good deal of the kidney left. It behooves us to save as much kidney tissue as possible, and therefore, I believe, with certain exceptions, it should be the routine practice to operate as was done in this case; first drain the kidney and try to relieve the distress in that way; if that does not succeed then nephrectomy is less dangerous than it was before. It is believed that the mortality arising from the two operations is but very little more than that which follows nephrectomy originally. This method of practice gives us the chance to save more kidney tissue.

The following is the discussion upon the paper read by Dr. K. HOEGH entitled

TREATMENT OF TUBERCULOUS JOINT DISEASE BY INJECTION OF IODOFORM EMULSION.

Dr. GILLETTE: I was very much pleased indeed with the doctor's reports of his cases. I have been using an iodoform injection for some time. While I cannot give such a good report in all my cases as the doctor has of his, still a great many of them have improved. I would like to ask the doctor if he always uses glycerine.

Dr. HOEGH: Yes, I do.

Dr. GILLETTE: I found that I could use olive oil, and that by boiling the olive oil it would make a much more watery solution, and that you would not need to use so large a trocar in those closed joints with which to inject your emulsion. I also found that the olive oil seemed to make a better iodoform emulsion than the glycerine, and at the same time I found that the glycerine sometimes irritated. I used the ether only once and the patient suffered too much pain and trouble and I did not use it again. I want to ask the doctor one question in regard to immobilization. Did you immobilize these patients all the time you were working at them?

Dr. HOEGH: Only for the first few days.

Dr. GILLETTE: I was going to remark that sometimes you will get almost as much relief by immobilization, and the symptoms will go away for a time and then return. I have been using it in these simple affections of the larger knee joint which are not attended with any pain or any trouble whatever except that they are effusions and annoy the patient. In a number of cases I have drawn off this effusion and reinjected the cavity with the emulsion of olive oil and iodoform. In the treatment of serous abscess I have been very unfortunate. I can conscientiously say I have never in a single case seemed to improve it a bit by the use of this injection. It seems to me that in the case which you injected it would have been still better to have immobilized the spine, or if you had put on some sort of a dressing which would have supported the spine there would have been speedier relief.

Dr. MAYO: I would like to add to the doctor's list three or four good results in my experience, and rather more failures. I have had one case of wrist joint and one case of shoulder joint in which the patient made a very satisfactory recovery in each case. In the case of tuberculous affection of the wrist there was an abscess formed about ready to break. We got a very fine result with almost perfect motion. In this case I think an incision quite likely would have led forward to amputation. In the breaking down of the glands resulting in cold abscesses we have not had such good results as we have had upon the excision of the gland. Take a broken down gland, penetrate with a trocar, wash it out and keep washing it out, and even after two or three months you will only have a result that could have been obtained in a very short time with a knife and a pair of forceps. The doctor has described a case which he treated successfully where the joint was filled with these fringes of tuberculosis, with little if any fluid. I tried it in one of these cases and had no result from it, I presume because it was impossible to work the iodoform sufficiently far around into the joint to reach the tubercular bacilli.

Dr. HOEGH: As far as immobilization is concerned I have only immobilized the patient until the irritation and pain which followed the operation had subsided. In the case of psoas abscess the patient was kept in bed all the time she remained under my treatment, and when she finally left me, there were, as far as I could see, the evidences of healed spondylitis. In fact I think that when she came under my treatment the spondylitis had healed. Now I want to call attention to the amount that was removed in that case; it was altogether about three pounds.

I have never heard that so large abscesses have failed to refill after evacuation, when they have been treated by any other method.

Comparing iodoform glycerine with iodoform olive oil emulsion, I will say this, that the glycerine when it is heated in a sterilizer with iodoform forms a very limpid fluid that will go through a very small opening, and if you use one of those ordinary bottles that are used for sterilizing milk for children you will succeed in procuring a very satisfactory emulsion. The doctor makes a statement about the glands, and I will say this, that you must not expect iodoform emulsion to do any good where you have a suppurating gland, because in that case we not only have the tuberculous infection, but also a mixed infection of pus bacilli, and we know that iodoform is not a very powerful agent in the most common suppurative affections.

Dr. MAYO: Do you not sometimes have a gland break down and form a cold abscess that is almost typical?

Dr. HOEGH: Yes, certainly; that is provided there is an opening of the skin. Where there is an opening of the skin you have got access to the bone not only for the tubercular bacilli from within, but also for other infectious organisms from without, and it is therefore not a proper tuberculous abscess, although you have a tubercular process going on. In such a case, you have this tubercular abscess mixed with something else, and, therefore, a remedy which is efficacious in treating tuberculous affections, and which will destroy tubercular bacilli, will not be efficacious in such a mixed affection.

Dr. MAYO: But where there is no opening in the skin, but simply a pure cold abcess?

Dr. HOEGH: Where there is no breaking down within, and no opening in the skin you have only a tubercular infection, and in that case you may use this injection with good hope.

Dr. ENGLISH: Does not Dr. HOEGH consider an injection of two or three ounces dangerous on account of the possibility of poisoning following so large an injection?

Dr. HOEGH: It has been specially stated by those who use these injections that they were absolutely harmless, but I have seen lately the report of at least two cases of injections of iodoform emulsion that have been followed by iodoform poisoning, and I would emphasize the fact that it should not be used in the treatment of very young children, say under four or five years; nor in the very aged, nor in persons with impaired kidney action. In persons that were at all doubtful I would use a small dose to begin with, and only after I had seen that there was no

individual idiosyncracy would I venture to make the dose larger. In the case of the young girl seventeen years old, with two abscesses, I injected the equivalent of six and one-half drachms of iodoform, nearly eight ounces of emulsion.

The following is the discussion upon the paper read by Dr. C. W. McINTYRE entitled

EMPYEMA TREATED BY EXCISION OF A RIB.

Dr. O'BRIEN: This paper is so meritorious that it should not be allowed to pass.

The paper preceding it was also a very valuable one, but as to surgery of the nerves I can say very little as I know nothing about it. Perhaps I know a little more about empyema. I agree with the doctor in a great many points. One is that purulent empyema is sometimes mistaken for pneumonitis or phthisis and the patient is allowed to go on with the routine treatment of consumption until it is too late. About two years ago when I was one of the assistant city and county physicians in St. Paul, I was called to the outskirts of the city to see a German who had been sick for six months. Two physicians had seen him and both had diagnosed phthisis. The man, while giving some of the signs, auscultation, etc., on careful examination gave unmistakable evidences that he had an effusion and some little pus. I sent him to the hospital and operated on him the next day. The man died before he got off the table, because he was so run down that he could not then stand the evacuation of such a quantity of pus.

There is one point about physical examination in pleural effusion that I wish to speak about. We are generally told that the vocal sound is entirely lost when we have an effusion in the chest. I have seen, as in the case of Dr. McINTYRE's, a great many effusions where the vocal sounds were increased, even though the effusion occupied half of the chest. In one case, that of a young girl of fifteen, with a serous effusion, I remember, it filled two-thirds of the cavity of the right chest, and the breath sounds were very distinct and in portions of the chest increased. I remember another case that I saw in consultation a while ago, a case that a very bright young man had charge of. He said that the patient was suffering from a congestion of the liver. I saw the case with him and I told him that I thought there was no question about the liver dullness being increased and went off. He simply asked me to see the case in the office the first time. On the second examination I could not believe that it was congestion of the liver, and I thought I would make an ex-

amination of the chest. I did so, and concluded it was a pleural effusion. A puncture was made and nothing found. After two or three days another puncture was made and pus was found. The liver had nothing to do with it at all, only it was displaced by the effusion. When one is called to see a patient suffering from chest trouble of any kind, I think the first thing to do in order that we may not make the mistake made in this case, is to strip the person to the waist, whether it be a man, woman or child, and then we should carefully search for the physical signs, taking them in rotation. In effusion you see difficult chest movement or vicarious movement, diminished expansion. Palpation will bear out your inspection. Percussion will sometimes give you an absolutely dull note which often does not change with the changes in the position of the patient. Auscultation, in some effusions will give absolute loss of breath sounds and vocal fremitus, but in many cases will be present to a greater or less degee. Where there are signs of pus, as in Dr. McIntyre's case, I believe a thoroughly antiseptic puncture, the skin well washed with soap and water, then ether and then bichloride, and an aseptic trocar introduced in the seventh or eighth intercostal space in the axilliary line, which I think is more satisfactory, is the best way to determine whether there is pus or not. If it is pus I think it ought to be evacuated immediately. I think in many cases that resection of the rib is not necessary; that with a hypodermic injection of from fifteen to twenty minims of a four per cent. solution of cocaine in the seventh or eighth space, making a puncture in the pleura and then inserting a forceps as Dr. McIntyre did and opening the space sufficiently, will give satisfactory results. Sometimes when a man is far advanced this excision is attended with danger, and for that reason when it can be done in the way I have suggested, I think it ought to be. The amount I gave can be used on a child without any bad effects as far as my experience goes. I want to repeat again that the paper by Dr. McIntyre is a most valuable one. It is upon things we meet every day, and I think we may all learn something from it, as perhaps we make as many mistakes in the treatment of pleural effusion as we do in any other affection.

Dr. Bell: There were one or two points brought out in the paper with reference to râles that I think ought to be discussed. First as to the presence of crepitant râles, the doctor mentioned. It is not an unusual thing to meet with these râles at that time. Another point is in relation to the tardy recovery of the patient and to the dullness lingering after recovery.

It seems to me that we might attribute a part of that dullness to the thickening of the pleura and not entirely to the solidification of the lung. The parietal, as well as the pulmonary pleura, we know is thicker as a rule after such effusion. I would like to ask the doctor on my left in regard to the voice sounds, what the character of the fluid was, where the voice sounds were so freely transmitted, whether it was serous or purulent.

Dr. O'BRIEN: The effusion was serous in the case of the girl fifteen years old.

Dr. BELL: As a rule vocal resonance is unimpaired or absent below the level of the fluid, occasionally increased over serous accumulations, but never over purulent, except where broad adhesive bands serve to convey it. Absence of vocal fremitus is an important diagnostic sign in favor of pleuritic effusion. I have never met with a case of pleuritic effusion where the fremitus was not diminished or absent below the level of the fluid.

Dr. ANDREWS: I have one or two criticisms to make upon Dr. MCINTYRE'S paper. One is that he resected the rib at all, and the other is that he did not commence at least within twenty-four hours afterwards and wash out the cavity with some antiseptic solution. My opinions were pretty well aired on this subject yesterday, and hence I will have but a very few words to say to-day, but I repeat what I said yesterday, that I believe in many cases of pleurisy with purulent effusion we are too hasty in resecting the ribs. Of course it is not so very objectionable an operation, nor very dangerous, but at the same time if we can arrive at the same thing and carry our patient through as well without exsecting the ribs, it is at least an unnecessary operation. Now there was a case with purulent effusion in which it would have been very easy to make a sufficient incision by pleurotomy and put in a drainage tube, washing out the cavity daily with an antiseptic solution; and I have no doubt that the result obtained would have been fully as good as the result that he did secure. He would have avoided what he said he had in two or three days, that is a return of the septic symptoms. I think that was caused by neglecting to wash out the cavity with an antiseptic solution. I think some speaker, or perhaps it was the doctor in his paper, remarked that it was not very easy to make a differential diagnosis between tuberculosis with infiltration, pneumonia and pleurisy with effusion. Now with a careful examination it is one of the easiest things that we physicians have to do. There is an entire absence of vocal fremitus with effusion, whether it be purulent or whether it

be serous. In pneumonia we have very distinct tubular breathing, and I think the tubular breathing that Dr. McINTYRE got in his case was due to circumscribed pneumonitis, and not connected in any way with the effusion. It is impossible—clinical experience shows that—to get natural vocal sounds where there is effusion, whether purulent or serous. It is a law in physics that different media will not transmit sound as well as one medium. Now, we have the lung tissue, we have the tissues of the chest, and then the fluid, either purulent or serous, making three different media; and the sound is therefore very much diminished. You may put your head under water and strike a couple of stones together and you will hear it very plainly; but let these stones be struck together while your head is above water, and the sounds passing through the water and the air are very much diminished. It is just so with the vocal sounds in serous or purulent effusion.

Dr. GREEN: It is difficult in many respects to criticise Dr. McINTYRE'S paper, but it seems to me that in at least one respect it is open to a slight criticism from a surgical point of view. In most of the cases of empyema which fall into the hands of a surgeon, the condition is deplorable, and the infliction of the least possible amount of shock seems to be a desideratum. As regards the actual technique of the operation, it seems to me that it would be far preferable to at once cut down to the rib and through the periosteum rather than to prolong the operation. The surgeon has a perfectly clear series of landmarks for his incision, and by merely cutting at once down to the rib through the periosteum, then resecting the ribs, he can perform the operation almost in a moment. I think in all other respects there is no objection to be found to the doctor's paper. It is certainly a very admirable paper.

Dr. FLIESBURG: I do not think there is very much to criticise in this paper, but there is one thing I want to speak about. I think the doctor erred, not in resecting the rib, but in not resecting more; that he should have resected not only one but two or three, three would have been better than two, and make it so that the chest wall could have retracted. He would not have had so much trouble if he had done this. As to what Dr. ANDREWS said, I think that a physician who only makes a pleurotomy in a purulent effusion of the character spoken of is very apt to have serious results. If he has had good results his skill must have been very unusual or he must have had very good luck. Dr. Estlander, of Finland, was the first to advocate it, and it was especially in old purulent, pleuritic effusions where

the chest wall had become, so to speak, glued or plastered together. We know that no retraction could take place under those circumstances. That is where he specially advocated it, and I think this is a most important point—that when we do resort to resection of the ribs that we shall do it thoroughly, resect not only one, but two, or still better three, making the middle one the longest resection and then making smaller resections above and below. Then we will have no need of any drainage tubes; no need of this irritation and the septic condition that follows, if we do not do it in a thorough manner.

Dr. McIntyre: I wish to say first in regard to the advisability of removing the rib at all, that I have treated cases without such an operation, but I have always found I have the best success in those cases where I put in quite a large drainage tube. Now, if we insert a tube of a diameter large enough for the drainage purposes, it seems to me, that in making the turn between the ribs, it cannot help but press against the lung and cause irritation. I think by removing one rib, leaving more space for the tube to be slipped up between the wall of the chest and the lung, we would have better success. That would be a good reason for removing a portion of the rib. In regard to the position of the cut, I think from the fact that the diaphragm rose up and the wall of the chest fell in on the lung and closed the opening, that it should have been made considerably higher, perhaps about the fifth rib, or higher. The reason why I did not wash out the cavity after the first time was because a number of quite prominent physicians, among whom was Dr. Loomis, of New York, speak very positively against the use of injections. Dr. Loomis told me a year ago last winter that he would not use an injection because there was so much danger from absorption of the medicine in sufficient amount to cause more disturbance than the pus itself would. The reason why I didn't cut down on the rib at a single stroke was this, the man was reasonably fleshy, and the tissues were perhaps three-quarters of an inch thick, or nearly so; the rib was not very large nor firmly fixed, and I thought if the knife should happen to slip off that rib and plunge into his liver I would be held responsible. The reason why I didn't cut more ribs in that case was because the case was comparatively recent. I think there had been no very great quantity of fibrous tissue formed and I think from the way the case resulted that my method was amply sufficient. I do not think where cases are recent that there really is any reason for resecting more than one rib. The rising up of the dia-

phragm and the fact that the ribs can swing down against the lung will close the cavity completely.

Dr. DUNSMOOR: I would like to ask the doctor who reported that case of death upon the operating table if he used ether. I believe that is just the secret of the operation, that ether is contantly indicated. In the second place I would like to say that you need not feel free from danger in using cocaine, for I have had a death result in a case where I only used a four per cent. solution, twenty drops injection. The patient died that night from collapse. Thirdly, I have saved as many patients by incisions as I have by excisions of the rib, by incision and simple drainage. I have found that if it is a small cavity it is well to use the incision. It is a question to be governed by the size of the cavity, how many ribs you should resect.

The following is the discussion on the paper read by Dr. J. H. DUNN entitled:

CYSTOTOMY—ITS MODERN METHODS AND APPLICATIONS.

Dr. W. J. MAYO said: Dr. DUNN requested me to open the debate on his paper. We all know that Dr. DUNN is authority on this subject, and knowing that I was an advocate of the supra-pubic method he requested me to open the debate on this paper, and I suppose he expects me to make a short argument in favor of supra-pubic cystotomy as compared with the median or any of the perineal operations. Now in regard to stone, I don't know that my experience is based on any cases except those that live in Minnesota. I have never seen a case of stone that was formed in Minnesota. I have seen several cases of stone in the bladder, but they were always formed by people before they came here. I do not know of a single case among the natives of Minnesota where stone has been formed, except in those cases due to deposits from cystitis, that is the phosphatic stone, but I mean the hard stone as we see it in Pennsylvania and through the South. There is no question, therefore, but that the crushing operation is the proper operation if the urethra is normal and the conditions are perfect. The great difficulty is that the class of cases we meet with in this country come to us very frequently with the urethra deformed. The cystoscope is used very seldom by most of us, and when we do use it, and the conditions and circumstances are imperfect it is apt to result in a lesion of the bladder. I think that fact is true of the crushing operation. In these cases that we see of phosphatic deposits, due to cystitis, they are very frequently hidden behind a large prostate gland where you cannot get at them. Now in regard to

the safety of the supra-pubic method as compared with the median, I think that Dr. DUNN perhaps is right, although when he said that he had twenty perineal operations and seven supra-pubic, it reminded me that I had a pretty nearly similar experience, only that it was exactly turned around. We all of us prefer to make operations that we are used to, and that may have something to do with it. Now, in regard to the technique of the supra-pubic operation. The doctor said there were many cases where it was very difficult, if not impossible, to get into the bladder from above. I presume that is true in some cases, but by raising the base of the bladder up with a rubber bag in the rectum, with a moderate quantity of fluid in the bladder, by cutting down on the pubic bone which is on the symphysis and not making too large an incision above, going immediately behind the symphysis with a pair of forceps, it has been a very easy operation in my experience. In regard to the safety of it I had no mortality myself, but still that does not cut any figure because one is liable to have it at any time. Yet I do not believe there is very much danger in it. I do not see how there can be in a large majority of the cases, other things being equal, as compared with the median operation through the perineum. In regard to being easier to take care of, my experience has been directly opposite. I find by putting a catheter through the supra-pubic opening, connecting a rubber tube with the catheter and puttnig that in a bottle, it has been very easy to take care of. I have had an opposite experience with the perineal operation. The urine usually runs all over the bed and makes a smell, and causes soreness and irritation, and the patients have not been so easily cared for. In regard to large prostates, it has been my experience quite a number of times to have old men brought to the hospital after ineffectual attempts had been made to relieve urinary incontinence, due to large prostates, on whom the catheter had been used with considerable force, and I found that the urethra in many of the cases had been ruptured at the neck of the bladder. Of course, the bladder in those cases is filled with urine and it is just as easy to perform the supra-pubic operation when the bladder is lifted up by a large quantity of urine, as to use a trocar, which is frequently done, and there is much less danger of urinary infiltration in the neck of the bladder. I have operated on three of those cases that were over eighty years old, and they all of them got well in a very short time. One of the men was partially insane when we began, and he got up in four days and was never kept in bed after that time. In the course of three weeks or a month these

patients would begin to urinate naturally, and I would be surprised when introducing a sound in these patients some time after to find that the large prostate had largely disappeared. I believe that I had the pleasure some four or five years ago of reading a paper before this Society on prostatic hypertrophy, in which thesis I took the ground that the prostatic gland was not only a gland but a muscle, and consequently man by exercising this muscle had gradually increased its power, and that these hypertrophies were due to a certain extent to forcing the urine back and retaining it. In those cases of operation by the supra-pubic method, giving the bladder complete rest, you would be surprised to find how, in a short time, these hypertrophies had almost disappeared, and you could introduce a sound without particular difficulty. In regard to tuberculosis, I think if there is anything that ought not to be done, it is to open up the bladder in a case of tuberculosis of the bladder. In the first place the wound will not heal, and in the second place, the tubercular bacilli are not removed. Then again, the case is annoying, flowing more or less all the time. You cannot heal it up. If you operate on it, the patient will die just that much quicker than he would if you left him alone. However, if you do operate, the supra-pubic operation is the better one.

Dr. FOSTER: Just one word as to the technique of the operation, that is, the supra-pubic operation. I recently saw Dr. WHEATON perform an operation where he adopted—I think at Dr. McLAREN's suggestion—Trendelenberg's board, putting the patient in that position, with the knees elevated. In this case there was no necessity for distending the rectum, for in that position the base of the bladder was perfectly visible to all of us. This was a case of hypertrophy of the prostate, and it afforded very striking evidence of the ease with which the bladder can be inspected when the patient is in that position. I am rather inclined to agree with Dr. MAYO in his statement that in almost all of these cases the supra-pubic operation is the best one, and the patient is the more comfortably cared for after it. I think that any of us who have occasion to perform that operation, if we will place the patient in the position described, will be more than pleased with the advantage derived from it.

Dr. McLAREN: I want to agree very decidedly with Dr. MAYO, and with the very able paper which I have enjoyed so much in regard to the advantage of supra-pubic cystotomy. It has been my good fortune to follow quite a large number of cases operated upon by Dr. WHEATON, to see the results and the ease with which the bladder was opened. I have operated

once myself, performing supra-pubic cystotomy, and I know that even a novice can have very little trouble in opening the bladder in the position that Dr. FOSTER speaks of. The addition of Trendelenberg's position in cystotomy is a great aid to the operation, in that it throws the bladder further forward. In the cases that I have seen operated upon, it was not necessary to dilate the rectum. The case which I speak of, which I operated upon myself, was for a hard stone, and one which I think was grown in this state, the man having lived here for a number of years in the southwestern portion of the state in the pipestone district. The symptoms of stone had but recently appeared, yet the stone was so hard that crushing was impossible. Of course the crushing operation for stone in the bladder is the ideal operation, and should be followed in every case where it is possible, but in a stone of medium size it seems to me that supra-pubic cystotomy is by far the best, followed by immediate suture of the bladder. Dr. Smith, in his book on abdominal surgery, advises immediate suture in such cases, and says that the results are as good as with an open drain, and that there is very little danger of supra-pubic extravasation of urine, provided the edges of the bladder are not torn with the stitches which are used to secure the same. He advises against much traction being exerted by the ligatures, which are inserted in the edge of the bladder wound, to keep it separated during the operation, for that reason. I removed the stone and sutured the bladder walls, putting in a T-shaped drainage tube. There was union by first intention with no rise in temperature whatever and the patient left the hospital in three weeks. The other cases which I have watched in Dr. WHEATON'S large practice have been very successful, with no bad results, and no rise in temperature to amount to anything. They have also been easier to take care of. They have been less distressing to the patient than a large number of perineal sections that I have seen in this same surgeon's hands.

Dr. FLIESBURG: I want to say here, in regard to what Dr. MAYO said about there not being any stone found in this state, that some two months ago I saw a case of a man who was born here in this state, who came to me for examination. I examined him and I am perfectly well satisfied that he had quite a large, hard stone. He agreed to come down again for operation, but he has not shown up yet. I can fully indorse what Dr. MAYO says about rest in the case of old men with these prostatic troubles. I had a case last fall where a man was brought into my office, who had been trying without success to use an English

catheter for drawing urine. I did not perform a cystotomy, but I used a trocar with drainage afterwards, and kept on washing out the bladder for about eight days. He then left and since that time has had no return of the very serious symptoms that he had when he came. He was seventy-four years old when he was treated, and I have been informed by his son that he is better since he had that rest than he has been for years. He had been a sufferer for about 15 years, and for about six years it had been necessary for him to use the catheter more or less often.

Dr. DUNN: I have but a word to say, and that is in reference to the remarks that have been made here about the ease of performing the supra-pubic operation. I have no doubt that it is frequently a very easy operation, but when the gentlemen who found it so easy strike such a case as I have met with in my practice, in which the bladder wall is from one-half to three-quarters of an inch thick, and in which the bladder is an irregular cavity running up towards the umbilicus, I think they will find that whether they inject the rectum, or put the patient in Trendelenberg's position, it will not make very much difference with the bladder. I do not doubt that they can get around the peritoneum, I think anybody can do that with enough trouble, but in doing it they will certainly tear up matters in the upper vesical space very much. Then there are a few cases, as one that I have meet with, and two or three of which I have read, in which the operation cannot be made without opening the peritoneal cavity. For instance, I made such a drainage on a man about a year and a half ago in which there was an immense tumor projecting high above the bladder. I believe it is a physical impossibility for any man to have opened that bladder and not gone through two layers of the peritoneum in doing it. Well, the patient recovered all right and he always thereafter used a catheter in the bladder inserting it at such a height that he had almost complete control of it. The point I am trying to make is this, that we are not to count the few operations that one man or another has seen that have been very easy. When we remember that such a master as Harrison is not particularly taken with the ease of performing this operation under all circumstances, I protest against these glowing accounts in favor of this operation, and ask you to remember that up to the year 1875, or 1877, the mortality of this operation had been one in 3.44. I do not claim that you cannot present a considerable array of cases that have given a good mortality rate, but I defy anybody to give statistics that will satisfy our minds about the supra-pubic operation being such a wonderfully easy operation.

I am certainly in favor of the supra-pubic operation, and my paper took that ground, but I believe we have been having an uncalled-for spurt of enthusiasm about the wonderful ease of this operation and the wonderful results of it, and I believe further, that if the number of cases taken into account be large enough, that you will find that this is not always so easy an operation. You will remember that in laparo-lithotomy we have tables including as many as five thousand cases, but no extensive tables have been arranged of the high operation since the modern technique, and I do not believe that this simple matter of elevation of the bladder, Peterson's method, and those other improvements have made or will make any such wonderful changes in the mortality of the operation. I wish to insist that as a regular procedure in all sorts of diseases of the bladder, that it will many times be found difficult as compared with the glowing accounts of it—that it will be found to be an operation of greater mortality than the simple perineal operation, when that will fill the bill. I think we should always choose the lesser operation when it is adapted to the case. I admit that the supra-pubic operation will probably have to be made in the majority of cases, in a large majority of the cases to which these two operations are applicable.

Dr. R. N. JACKSON reported

A COMPLICATED CASE OF CANCER OF THE UTERUS.

Dr. JACKSON: I simply give you a verbal report of this case that I operated on. This is Mrs. L., a woman fifty-two years old, who has had several children. When first seen I found nothing remarkable, but she complained of irregular menstruation and foul smelling discharge. Examination showed the perineum entirely torn and destroyed by previous child birth clear down to the sphincter ani muscle. There was an extensive procidentia, and the vaginal walls, bladder and uterus protruded upon her standing or making any expulsive effort. It was the worst case of procidentia I have ever seen. It found a large, granular ulcer, larger than a silver dollar, which was the source of this foul smelling discharge, and I called it a cancer, advising its removal. She came in the first of March, or about that time, and I removed it. When I began the operation I found that I had a bigger job than I expected. I found that what I thought was the neck of the womb proved to be something else. There seemed to be a piece of the vaginal tissue nearly two inches long —whether it was the result of the old laceration in confinement or not I do not know that was drawn down and corrugated like

one of those water pipes. It was very hard, almost fibrous, and I took it for the neck of the womb until I found it was not, by a rectal and other examinations. The opening in that was so small that I could not by any possibility introduce my finger, and it had every appearance of being the neck of the womb. I found as I operated, however, that it was not but that it was the vaginal wall. I cut through the vaginal wall and took out the posterior lip of the uterus. I had quite a serious cellulitis following it. I put in sutures, but had to take them out to secure free drainage, and washed with the bichloride solution. She rode home in three weeks, a distance of nine miles, over a hard road. I saw her in town the other day and she said she was well. I did not send her to Dr. McLaren for hysterectomy because she would not go. I do not know that it was necessary, because there didn't seem to be any lymphatic infiltration. The flowing has all stopped and she thinks she is well. It is remarkable to me how the woman did very hard work for years on a farm with such a complete destruction of all supports, of all the ligaments that should hold up the womb.

The following is the discussion on the paper read by Dr. Burnside Foster entitled

REMARKS ON THE TREATMENT OF SYPHILIS.

Dr. Dunn: The paper so admirably outlines my own views of the treatment of syphilis, that I have very little to say in the way of adverse criticism. In the first place, as to the curability of syphilis, I think I have a rather unique example of the fact that syphilis very frequently runs a very mild course, or, we might say more properly, it aborts or ceases in its various stages. For example, seven years ago I commenced the treatment and observation of a young man who had contracted a chancre. It was typical, and was followed by a typical roseola which lasted three or four weeks. He received the usual treatment of protoiodide of mercury for one month, at the end of which time the patient concluded that he did not need any more treatment, and although I protested and advised him very strongly to take further treatment, I became convinced that it was useless to argue further with him, and allowed him to stop. He took no more treatment. He has been under my observation from that time to this, and during those seven years he has never had any further manifestation whatever of syphilis. I believe there are occasional cases in which the primary sore is a true syphilitic chancre in which nothing is subsequently observed. Such cases must be very rare, but I think this fact is not always recognized.

A very able practitioner in my town spoke of a case in which he had diagnosed a chancre, and in which seven or eight other very competent practitioners had unquestionably diagnosed a syphilitic chancre, and had advised treatment. The patient, however, floated about here and there, consulted some homœopathic brethren and got various kinds of advice, some telling him that he had no syphilis at all. Among others I think he went to a very competent man in Chicago, and he also informed him that it was unquestionably a syphilitic sore, and advised him to take proper treatment. His advice was never followed, and the individual now lives in this city and has never had any manifestation of syphilis. I think there is every reason to believe that syphilis may cease at any stage. This we know in small pox—an infectious disease—in cases that have been recently vaccinated, we have seen the papules appear very thickly all over the body, and cease at that point, not going on to pustulation. There is no doubt but that in very rare cases syphilis may cease at any of its stages. It is well known that tertiary manifestations of syphilis only develop in a certain proportion of cases. I was very glad to see the able way in which the specialist presented the facts as to the severity of syphilis, and I think it is about correct, as it appears to me. I was quite astounded, after observing in clinics and as a student, the ravages of syphilis, to see how mild a course syphilis has generally run in the majority of cases in the better classes of private practice. I have had quite a number of cases of syphilis in the last few years, and a good class of people have come under my observation. In all that time I can think of but one case that resulted disastrously. One gentleman contracted syphilis and gave it to his wife and she died. My colleague, Dr. JONES, made a post mortem examination when the lady died, two months after contraction of the syphilis, and found that she died from a disease of the nervous system. That was to me an unheard of result. It seems to me there is no disease more interesting in its exceptions and peculiarities than syphilis. As a general rule, it is a comparatively benign disease in the better class of people, so far as severe manifestations are concerned, but I must confess that some cases are hard to understand. I can think now of a case of a young lady in apparently most excellent health, who was supposed to be of good habits in every way, and who, despite all treatment that could be given her was fearfully plagued with mucous patches. She certainly did not smoke or have any other source of irritation. On the contrary, I think of an officer whom I have treated for syphilis and who has been under my observation now for four

years, who used plenty of cigarettes and considerable whiskey, and although he is a man of good physique, he has never had a sore in his mouth or throat during the whole course of the syphilis, although there has been abundant evidence of the disease upon his skin. As to the excision of the chancre, I can say that I have had no personal experience whatever,and being a pupil of Neumann, and hearing him say, while I was attending his clinics, that for seven years he had religiously excised all chancres that had fallen under his observation, and that with but one exception in the whole course of this time he never failed to have it followed by syphilis, of course I felt rather prejudiced against it. But I believe there is good reason to think that the view of the case that Dr. FOSTER has presented, that is, that in proper cases the removal of the chancre may do something to modify, is a good one. I cannot see why it should not be, for it is claimed that the severity of the disease depends somewhat upon the amount and severity of the infection, and there seems to be a stage in which this can be modified. I believe it is a good practice, and I shall do it whenever I have an opportunity, although unfortunately most of the cases that have fallen under my observation have come too late for what would be a proper time, in my opinion, for the excision of the chancre. However, I shall certainly try it upon the lines laid down by the essay, that is, in proper cases where excision can do no harm to the organ. I believe there is no doubt, from the amount of evidence adduced, that such a course is productive of some good results, although we can see that in a disease having such a varied course as syphilis, it is extremely difficult to arrive at any positive conclusion. It is only after a prolonged observation of a large number of cases that we can arrive at any definite conclusions upon this question. Now as to the treatment before the appearance of the secondary eruption, I will say that I firmly believe that treatment should not be instituted until this time, if for no other reason than the fact that in a certain proportion of the cases the diagnosis is not always certain. So long as a man of Neumann's experience, who daily, year in and year out, in a large clinic, sees a large number of chancres and syphilitic sores, conscientiously hesitates, as I have on occasion seen him do, I think we must all feel a little doubt in this matter. As long as we think there is little or nothing to be gained by immediate treatment, I think we should give the patient the benefit of the doubt, for it is a great calamity to have a man think he has syphilis and be treated for it two years, when he has not got it. I therefore adhere to the rule of waiting for the secondaries to appear before beginning treatment. As

to the use of the iodine treatment, which the essay has condemned, I must say that I fully agree with the doctor. I believe that the iodide of potash removes the phenomena of syphilis better than any other drug, but I do not know that we have any evidence whatever that it does anything to eradicate syphilis from the system and cure it. Therefore the only circumstance under which I use iodide of potash in the first year of treatment, is when I wish to get rid of some of the phenomena of syphilis that are very unpleasant to the patient. For instance, when the patient presents a very sore throat in syphilis, and is thereby very much annoyed, I sometimes give the mixed treatment for a week or two until it subsides, and then I immediately drop it. I believe that the curative element, at least of secondary syphilis, is mercurial treatment, and that a patient is not being well treated who is treated with the iodine treatment during that period. I believe that the treatment, as it has been mapped out, by some form of mercury, may be used with the greatest advantage; I think it is somewhat immaterial which of the mercurial preparations we use so long as we use them. So far as I can see the average case of syphilis is very badly treated, in fact, I should say that not much more than one case out of four of syphilis was treated at all. This is due, first, to the ignorance of the patient. There are not many patients that can be treated properly for syphilis, for they do not understand the situation. They will quit the treatment and change doctors and all that. The second reason is that so many physicians are not posted in the proper treatment of syphilis. They know the drugs to use, but I believe that they generally over treat it. They generally use too large doses and make the patient sick, and he quits—very properly, too. A study should be made of each case as to the proper dose for that individual. I will repeat that I think that persons who are not in the habit of treating syphilis many times over treat it.

Dr. VANDERHORCK: I am extremely sorry not to have heard all of Dr. FOSTER'S very excellent paper, but it was impossible for me to be here in time, although I wanted to be very much. Referring to what Dr. DUNN has just stated, I think he states the views of most of us. I do not think that the iodide treatment either in the secondary or early stages of syphilis has much of any effect on the disease or even on the symptoms, except so far as it assists and hastens the elimination of mercury from the system. Only in the compound treatment is iodide of potash good in the secondary stage. There is a point about which I wish to speak and that is the use of the inunctions, and the way

they are used, especially in this country. I hear very frequently about it from the students in the class room. They say: "Doctor, we are told by our preceptors that the patients will not take the inunction; it is nauseating and all that." Fortunately our American public is pretty well educated nowadays, and if you will take your patient and talk to him carefully about the advantage of the inunction treatment over the other treatment, you will very seldom have any trouble in having him take that treatment. I can remember hardly one case of syphilis that I have had in private practice, outside of a few such cases as Dr. DUNN spoke of, where the patient would break away from your instructions anyway, that has taken the inunction treatment and not done well with it. It is my opinion that it is by all means the best plan. You can introduce at least two or three times as much mercury by inunction as you can hypodermically, or by the mouth, and the absorption is constant, small quantities being rapidly and constantly absorbed. In careful tests which have been made in European hospitals the elimination of mercury can be traced to the urine for six or eight weeks after a course of the inunctions is over. In regard to the tertiary symptoms, I have followed the instructions of Neumann, that they are not syphilis in themselves, but simply the results of syphilis, and therefore amenable to the same treatment only in so far as to prevent the return. After the course of iodide has been finished, the other treatment should be promptly given. Mercury, of course, is the only drug in syphilis which will act in overcoming the poison. Now, in regard to Dr. DUNN's remark about cases ceasing at a certain time in the last of the disease, or in the secondary or primary stage. Of course there are such cases practically, although theoretically I do not think that is the case. I believe that syphilis wears itself out in time, that the symptoms may be exceedingly mild, and the person die of some other disease. There is no disease which has so many irregularities as syphilis. I have several cases in mind, and one is of a man whom I have had under observation for two and a half years, who came to me with a syphilitic sore on the end of his penis, but to this day he has never shown any symptoms of syphilis outside of this. The sore did not respond freely to the application of mercurials, but responded better to simple dosing, poulticing and protection. I put on the mercurial plaster in this case because he told me that the sore had been present for six weeks, although I found no constitutional symptoms. I have seen him very frequently and watched him closely since then, and up to this time he shows nothing. I do not think that was a syphilitic sore. I have seen a great many cases which

have been slightly cauterized by nitrate of silver that you cannot say are true initial lesions. Therefore I think the diagnosis ought not to be made until the secondary symptoms appear. Dr. DUNN's point is exceedingly well taken, that no constitutional treatment should be begun until the secondary symptoms appear. Here is another suggestion. In some cases a strong, robust man, perfectly healthy, will contract and develop a very malignant form of syphilis, and will run down very rapidly. Now, in that case you cannot give the treatment that you would in other cases. In regard to the hypodermic or the intra-muscular injections, I think the preponderance of opinion is very much against the use of the insoluble salts for the reason that you run a great risk of mercurial poisoning or death. There are undoubtedly a good many more cases of this kind than we ever hear of. The European clinics, as thorough as they are, do not report all the bad cases they have. I by all means coincide with the doctor that the soluble salts are the best, and especially the one that he mentions, Rosenthal's solution of one per cent., which gives very little pain. The effect of the inunction is different with different persons, the texture of the skin, etc., making some difference. I have had occasion in a case of severe syphilis to use the inunction combined with a large dose of iodide of potash. It makes a very rapid absorbent and has a very good effect. I have been trying to think of the name of a physician who has written a very extensive article upon this subject, of the different methods of treatment, in syphilis, and who has made a careful study of it. He writes that he gets a very rapid and much better result from the combination of the iodide of potash with the inunction than you can get with any other treatment known at the present day.

Dr. FOSTER: I have but very little to add except to express my gratification that the subject has called out so much discussion. Dr. DUNN speaks of the iodide of potassium as only being useful in the tertiary period of syphilis, and as removing not the syphilis but the results of it. I would like to ask Dr. VANDERHORCK if he saw a case of severe nerve syphilis, whether he would be satisfied to treat the patient with the iodide of potassium, or would he consider it necessary to use inunctions?

Dr. VANDERHORCK: I would combine the iodide with the in unctions.

Dr. FOSTER: I would not be satisfied myself to let the patient go without a course of mercury, even if I saw him for the first time and knew that he never had been treated by mercury. In regard to inunctions I have not been as fortunate as Dr. VANDERHORCK in making my patients willing to take them I believe that

the inunction is the best method of treating most of the forms, both of secondary and tertiary syphilis, combined with the proper applications, but my experience in private practice has been that the patients refused, very often, to accept this form of treatment.

The following is the discussion upon the paper read by Dr. E. J. BROWN, entitled

ADENOIDS AT THE PHARYNGEAL VAULT.

Dr. ROBERTSON: I have treated many cases of this adenoid disease,but not in such small children as the paper mentions. I have treated children and persons ranging in age from ten to twenty-five years. There is no doubt but this adenoid tissue interferes greatly with the respiration through the naso-pharynx. I have used in many cases the galvanic cautery. The bar electrode was invented by Dr. Shirley, of Detroit, and is used by him. There is considerable difficulty in using this electrode behind the palate, because of the raising of the palate of the patient when you touch it, and great care must be exercised in using the electrode. I have removed the pharyngeal growths with the curette and great benefit has been done in all cases. I would like to call the attention of the Society to this fact. I had three different cases of deaf mutism brought to me to examine the naso-pharynx,and in all three cases I found the obstruction of the pharyngeal vaults due to adenoid tissue, and the obstruction of the Eustachian orifices was complete. I suspect if this adenoid tissue could be removed and the air introduced into the Eustachian orifices that these people might be able to hear. This is only a supposition,because I had no chance to perform an operation in any of the cases. Two of them were grown persons and the third a child. They probably possessed hereditary adenoid growths which obstructed the Eustachian orifices, and prevented their use. I would like to have any of the profession who may meet with a case of this kind, deaf mutism,examine the naso-pharynx and see if this condition exists in all those cases. If it does and there is any chance whatever to relieve it by operation, it would be quite an advantage. These cases are among the worst that fall into the hands of specialists, cases of enlargement of the pharyngeal tonsil. I have experimented in a great many ways in trying to better them. I remember that I had a long gold needle made which I passed through the nose, and endeavored to inject in this way substances that would cause the absorption of this growth, but the results were not particularly good, because the minute I would withdraw the needle the fluids which I used would follow it. I think the only way is that recommended by

Bosworth, which is to remove them by means of the galvano-cautery or of the curette. I differ a little from the statements made in the paper about the appearance of the children. Usually when a child is brought to a doctor suffering from this affliction if you allow it to stand for a few minutes you will notice that instead of closing its mouth that it will stand with the mouth wide open, and a peculiarly idiotic stare upon its countenance. This is one of the symptoms of this adenoid growth, and as soon as the growth is removed this peculiar expression will gradually disappear from the face, and the child which has been supposed to be lacking in mental activity soon becomes like other children.

Dr. DONNELLY: I have had a little experience in this line, and I think the presence of adenoids in the vault of the pharynx is more common than imagined. I think it would be safe to say that at least from two to three per cent. of children between the ages of four and fifteen years have adenoid vegetations in the vault. We all know the effect of vegetation or growth upon the condition of the auditory apparatus, and upon the respiratory surfaces. We know that in occlusion of the pharyngeal vault we have the condition known as mouth breathing, and the subsequent condition of the patient is permanently affected. The breathing is imperfect and the development of the chest and chest muscles is imperfect. We often have those cases that are seen in after life where the alæ of the shoulder blades are raised, giving the characteristic phthisical appearance, and in many of those cases—although we know nowadays that phthisis is a contagious disease—yet we find that the imperfect aëration of the blood by the imperfect development of the chest seems to be a considerable factor in the development of phthisis in the individual afterwards. In regard to the treatment, there is only one, and that is the removal and the application of astringents as recommended by Stoerk and others. I think the latter are very little used. The simple removal is very efficacious; scraping by the finger nail has but very little affect. I think that by the use of Gottstein's knife, as improved by Politzer, we can effectually remove these growths from the pharyngeal vault. I think the family physician, especially where he finds the child suffering from snuffles and breathing through the mouth, with that loss of tone in the voice which is very characteristic of the ailment, should make a thorough examination, and if a growth is found a speedy removal will benefit the general health of the patient.

Dr. O'BRIEN. The question that came up in this paper of snuffles is one that ought to be impressed upon us. I have from 35 to 40 infants under my care every month, ranging from a day

old to two years. I remember when it was thought that when a child had snuffles you could count on it as being congenital syphilis. It was before this so-called hypertrophy of Lushka's tonsil was recognized. That is a point that ought to be thought of.

OBSTETRICS AND DISEASES OF CHILDREN.

E. A. FISHER, M. D., CHAIRMAN.

CHAIRMAN'S ADDRESS.

AN ADDRESS ON OBSTETRICS.

Mr. Chairman, Ladies and Gentlemen of the Society:

In the glare of that marvelous brilliancy to which the science of surgery has of late years attained, the department of obstetrics has, with some others, drifted into unwarranted neglect. It is not the purpose of this paper to detract in the slightest degree from the merits of any department, but to suggest that there is at present an apparent danger of losing that perfect equipoise so essentially necessary to constitute a competent and efficient custodian of the public health. That this branch of practice affords many unpleasant features is but too evident to any experienced obstetrician. It is no less true that there are some more agreeable features. Success is always welcome, and there are times in the experience of every competent accoucheur, when the distasteful element is forgotten in the enjoyment of a noteworthy victory won. Rightly estimated, no branch of practice is more important than this, nor is any more far-reaching. It is not limited to the simple mechanical duties of the midwife in ordinary labors, but extends far into the domains of surgery, nor less to the field of therapeutics. In no department of practice are graver responsibilities assumed than in this. The specialist in other departments holds one human destiny in hand; the obstetrician two or more. The broadest attainable knowledge is demanded for such as assume such responsibility, and yet we see it recklessly assumed by ignorant, uncleanly, repulsive old beldames, who could not tell a gravid uterus from any other tumor of like size, if both were removed and laid before them for inspection. There are also not a few so-called "doctors," authorized, or rather permitted by existing laws to practice, who are equally ignorant and unsafe. Yet the fact that so few really die under their direct supervision, gains, through ignorance, a favorable interpretation, and so the mischief is perpetuated. The many injuries to mother or child, or both, are never brought to light, till possibly at a later date the gynæcologist or the surgeon is sought out, and such relief obtained as is then found possible. All authors as well as instructors advise counsel and assistance in cases presenting serious complications. In

other departments this might with few exceptions be easily observed, even in cases far from any town; but the obstetrician not infrequently meets with the most critical cases at times when the delay incident to calling counsel would result in inevitable disaster. No one then needs more thorough armament, not merely therapeutic and surgical armament, but beyond these a most thorough knowledge of the anatomical, physiological and psychological peculiarities of the complicated mechanism whose future weal or woe rests now almost entirely upon his efforts and ability.

It is expected that some of the most essential parts of this subject will be presented by others who have kindly responded with writings as requested. A few generalities then, or such items as come to mind at the time of this hurried writing, will suffice. First, then, there is in this rapid age a growing tendency to hurry everything, and it is beyond question that many women are injured by the accoucheur yielding to the ill-timed urging of anxious friends and relatives to hasten the termination of a merely natural, uncomplicated labor. Again the delayed use of the forceps may, and often does prove no less disastrous. Whoever happily possesses the requisite knowledge and firmness to manage not only the case in hand but the over anxious, over officious friends, is the one who will win.

There is a great diversity of opinion regarding the etiquette of the lying-in chamber, if we may judge by the difference in custom of the average male accoucheur. The unnecessary exposure of a woman in the pains of childbirth has always seemed to the writer inexcusable. I have yet to meet a case where, with fairly intelligent, though untrained assistance, it is necessary, even in turning or delivering with forceps, to make any exposure. A digital examination will, in most cases, suffice to determine whether or not we have to deal with a ruptured perineum. If we have, it is then time enough for such exposure as may be necessary. This procedure, when needed, should on no account be neglected, and if done promptly and with proper care and dispatch, is comparatively painless, the tissues being less sensitive just then. When the average woman comes to know fully what this repair secures to her in the way of future comfort, and what its neglect means in the way of future wretchedness, there will be no need of laws regulating the practice of midwifery in Minnesota, or elsewhere. The survival of the fittest will be the rule by which accoucheurs will then be chosen, and the blundering, bungling, misery-producing ignoramus will be relegated to the shades of eternal obscurity. " 'Tis a consummation devoutly to be wished."

THE CARE OF WOMEN BEFORE AND DURING CHILDBIRTH.

HELEN W. BISSELL, M. D.

When asked to prepare a paper on the subject of the care of women before and during childbirth, I hesitated to undertake the task because it is a topic that does not admit of statistical solution, but one where we must deal almost exclusively with generalizations.

It is not my intention to write an article on the subject of antiseptics, the best medicines to use for nausea, or the necessity of examining the urine, though I shall touch upon them, for I speak to an assembly which I consider fully informed in such matters, but to take up rather a series of subjects not generally touched upon.

I believe it is Oliver Wendell Holmes who claims that in treating patients we should begin with the grand-parents, and while there would generally be found difficulties in the way of carrying out such a course, we may produce a profound influence on the coming generations by the manner in which we educate our girls, who are to be the mothers of the coming race.

And I think it is just here that the first and most fatal mistake is made, for in dress and manners they are treated in a way to undermine their strength and thwart nature's efforts to rectify mistakes.

As far as my observation goes, most girls like to play as hard games, run, jump and climb as their brothers, but so early does the repressive process begin, that in cities especially we seldom see nature given a fair chance. Then her dress is an outrage on all physical laws, and carries its dread work in exactly the direction where it can do the most harm; but there are evidences that common sense and lawn tennis, together with Jenness Miller are inculcating some new and radical ideas.

I feel that the education of girls is not taken sufficiently into account, and that few grown persons realize how early a child begins to study the great facts of nature. A little child can be shielded in many ways, but as she grows older, knowledge of health and life is left as a rule to chance, and to the frequently contaminating influence of schoolmates, who themselves are not to blame for the information passed along in a compromising manner. Mothers should hold themselves primarily responsible for their daughters, so that when the time comes for them to face the great truths of maternity, they can do so with a calmness born only of knowledge and full acceptation.

The science classes in our public schools will, I think, have a wide-reaching influence, for there the children are taught to watch the various forms and changes of life in a scientific manner.

The principal of one of the largest public schools told me that it was surprising to see the change in the scholars since those classes were started, and that where once there were silly giggles when such subjects as the laying of eggs were mentioned, there was now the interest born of respect that was wonderful to see. Then also in the High School the girls in the physiology class are instructed by a physician as to the care of their health as women, and some general ideas as to pregnancy and childbirth are given.

I think it is difficult for physicians to realize the depth of ignorance of some of the young to be mothers, and it seems to me that the first duty of the physician is to find out where their knowledge ends and to supplement it if necessary. If the physician is not beforehand, intrusive friends and old nurses will fill the already apprehensive mind with false ideas and ghastly details.

Two most striking instances were related to me of themselves by otherwise highly educated women, and supposedly well informed ones. The first stated that during the first few months of pregnancy she was rendered miserable by the fear that during one of her paroxysms of nausea she might vomit up the baby. The other imagined the only method of delivery was by abdominal section, which idea was strengthened at the time of confinement by the sight of some scissors in the hands of the nurse. So impressed was she as to the horrors of the operation she was to go through, that when she found the baby was born and no cutting necessary she passed into a series of fainting and hysterical attacks which endangered her life, and a nervous, ever troubled child showed the strain she had been under for months.

Patients should be encouraged to exercise in a quiet and continuous rather than in a violent manner. Long walks and rides are to be avoided, while the ordinary duties of a housekeeper are a good thing if not carried too far. I do not think any form of calisthenics or prescribed exercises can in normal cases take the place of the varied duties of a family life.

The matter of food will many times be brought up for consideration and patients will ask about the rice and fruit diet, and the resulting boneless or gristle babies.

I have studied to some extent this so-called subject of tokology, and cannot understand its philosophy; and while I believe

that a great deal can be done to improve the mother's condition by the liberal use of fruits from their general effect on the system, particularly as relieving the ever present constipation, I cannot see how the profound effects claimed can be brought about. Even if they could be I should consider the artificial rachitis far from desirable: the anxiety I felt over one child who had almost no bony structure to the spinal column, and the difficulties experienced in avoiding deformity, opened my eyes fully to the difficulties of dealing with a universally boneless child.

The inhabitants of India have for centuries lived on rice and fruits, and though as a rule the women have easy labors, the reports of missionaries are not reassuring as to the universal absence of suffering at such times, or their perfect recovery. Then also our American Indians who live on meat and maize have equally easy labors, though they violate every one of the tokological rules of diet, while in Ireland, where the peasantry eat anything they can, the women have as little suffering as those of many of the barbarous nations. It seems to me that civilization, such as we have, has so far simply enlarged the child's head without making an adequate increase in the pelvic diameters.

All these questions aside it must be remembered that a child is fundamentally a parasite, and absorbs from the maternal system what it needs for building up its own, and it is in that way the rapid decay of the woman's teeth and the softening of her bones is explained.

In answer to a note, I received the following letter from Dr. Mary Putnam Jacobi: "In regard to that bone making business I am certain that is nonsense. I mean to deprive the pregnant woman of lime so that the bones of the infant's head should be soft. Lime is essential, not only to the formation of bone, but of all cells. As Bencké says: 'Without phosphate of lime there is no cell formation.' It is certainly undesirable that a pregnant woman should eat too much, notwithstanding the remark of Faust 'She feeds for two when she eats and drinks.' The requisite nutritive surplus is supplied by the economy in motor force which is diminished. The extra nourishment should come during lactation, when it is often neglected. Then it is certainly desirable not to allow the muscular force to reach such a low ebb as it does in many women. I think the year before pregnancy is allowed to begin, a woman might often go on a special training, as men do for a race, storing up such a surplus of muscular energy that when this is diminished by pregnancy

there will still be enough to keep the woman active and thus appropriating her own nourishment. When a pregnant woman's nervous and muscular systems are inactive and flabby, her life indolent and her diet rich and abundant, there is much chance that the child will grow too large, while the forces that are to expel it, the nerve centres and abdominal walls are constantly growing weaker. Hence the hard labors of so many women in the luxurious classes, even where pelvic deformities are less common among them than among poorer women whose defective nutrition in infancy may have caused rickets."

Dr. Emily Blackwell writes: "As to the question of influencing the child by the mother's diet, I do not know of any reliable experiments or statistics on the subject. I do not know that we have any reason to suppose that we can effect it, except in a general and secondary way, according to the effect on the mother of a liberal or restricted diet, and even that is uncertain, as everyone must have seen well developed and nourished children born of women who themselves have been poorly and insufficiently fed."

The suggestion by Dr. Chadwick, to use in cases when there is a deformed pelvis, a general regimen, such as is used to prevent the formation of fat I consider good, but have had no experience in the matter.

At times the question of allowing a pregnancy to continue becomes of the greatest importance, and here comes on the recognized necessity for a careful examination of the urine, so that in case there is a tendency to renal disease or trouble has already developed, proper precautions for the safety of the patient can be taken. I am convinced that these symptoms may be found to a marked degree, and yet no interference be necessary. I had one case where the urine was more than half solid on boiling, the vision much affected, and headache constant, where by persistent use of alkaline cathartics she was able to pass safely through her confinement, when the urinary trouble almost entirely disappeared.

At the New England Hospital there were two cases complicated with large fibroids. In the first a mass was below the child's head and Cæsarian section was contemplated, but at the time of labor the tumor rose into the abdominal cavity and there was no special trouble. In the other case a rather tedious labor was the only result, though involution did not take place readily.

In cases of distorted pelvis each has to be decided upon its own merits, with the growing feeling that craniotomy is an oper-

ation of the past, and that either premature labor or Cæsarian section are to be considered preferable.

I fully believe that with the advance of science, obstetrics will become one of the great and recognized specialties, and that some of the physicians now practising in that branch of the work will observe precautions not now considered necessary, and that all contagious and infectious diseases will be ruled out of their work. At that time also I should judge that the obstetricians will insist on being called at an earlier period than many consider necessary at present, and will remain at cases more closely than is possible when one is answering the imperative claims of a general practice. It would seem that a physician's province includes more than seeing that the head passes safely over the perineum and that the placenta is delivered, but covers the direction of the whole course of labor. Even with trained assistants I have seen patients directed to exert themselves to such an extent that the women were seriously exhausted and to a certain extent the labor complicated. The necessity for being on the spot to rectify complications that might occur, has been forced upon me by my own very serious experiences in that direction. In the first case I had after graduation the cord came down with the gush of waters, and vigorous pains rapidly following each other, gave no time for the classical methods of re-placement, so I put the woman in the knee chest position, pushed back the advancing head, replaced the cord and in a moment all was well as the child's head filled the superior strait. Later I had a similar experience, met in the same manner. Twice at the rupture of the membranes the head slipped to the left side; once I could by external and internal pressure bring the head back to position, the other in spite of my efforts became a shoulder presentation when I at once turned and delivered. Three times I have had acute œdema of the lungs which had to be treated at once to give any possible chance to the patients, and where with my best efforts I lost one mother with her child.

Some may argue that accidents occur only once in fifty to one hundred times, but I think if one in fifty or one hundred passenger trains ran off the track, there would be a loud call for a somewhat different management.

Some methods of uterine treatment seem questionable, and the fact that nearly every physician has in the course of his or her practice of years, had the misfortune to bring about a mis, carriage, should, I think, lead to the treatment of every married woman as pregnant. This fact was especially impressed upon my mind by a result obtained while experimenting with elec-

tricity as a cure for sterility. I had made arrangements for treating a woman who had been married for four years, but for some reason or other kept putting her off, and when she finally came it was to tell me that she thought she was six weeks pregnant, which proved to be the case, and I can never see the child without appreciating the desirability of not doing. If a pregnancy had occurred a few months later I should have considered I had done a good thing, when in reality I should have destroyed a living child.

When we see in what surroundings women are confined and do well, and then with every possible precaution others have trouble, it is difficult to say what amount of cleanliness is necessary for a mother's safety. The time for preparing as for a capital operation has passed, but the great doctrine of cleanliness remains unchanged and unchangeable. Water, hot and cold, with plenty of soap and well directed industry are generally sufficient, though in cases where there have been many examinations, or in a hospital, I like a limited number of bichloride douches, and as much clean clothing as the means of the family will allow.

In conclusion I would say I consider the greatest mistakes come from a tendency to consider the pregnant condition as a pathological one, and to feel that stronger and unusual methods may be desirable, when what is really needed is a more watchful care and a fuller comprehension by men and women alike of the laws that govern good health and right living.

THE RATIONAL TREATMENT OF PUERPERAL SEPTIC INFECTION.

J. L. Rothrock, A. M., M. D.

It might seem appropriate at first sight to prefix my remarks on this subject with an apology, since in a well regulated practice based on our knowledge of the causes and means of prevention, septic infection of the puerperal woman ought never to occur. Unfortunately, however, our high ideal fails to be realized, and probably it never will be as long as this important branch of medicine continues to fall into the hands of the uneducated and often unscrupulous charlatans who are responsible for the majority of these cases.

Recognizing then its prevalence, how shall we best deal with it and avoid the mistake of adopting a routine method of treatment for all cases, as is too often done?

With that end in view, I have based this paper on a study of the origin and mode of infection, with a consideration of the pathological condition existing in each case, each of which it will be necessary to consider here briefly.

It is now generally conceded that puerperal infection is caused by the introduction into the system of certain microörganisms or their products through wounded surfaces in the parturient tract, or the uterine cavity, which is to be regarded in the light of a wound.

As etiological factors two groups of bacteria are now recognized. One group, known as pathogenic bacteria, are parasitic. They are characterized by their power of penetrating the living tissues, where, if the conditions are favorable, they thrive and multiply, so altering the chemical constituents of the body as to seriously interfere with its normal functions or even produce death. To the other group belong the saprophytes. They differ from the parasites in their ability to live only in dead tissues, where they multiply and elaborate poisonous chemical compounds, which, being absorbed by the blood, by their action on the vital centres produce characteristic symptoms.

Bumm[1] following Kehrer's classification recognizes these two forms as septic infection and putrid intoxication, which is precise and expressive, but I have found it more convenient to consider both under the head of septic infection.

While several varieties of the pathogenic group have been found associated with puerperal sepsis, the streptococcus seems to be the chief offender, being uniformerly present in the majority of cases. Occasionally, according to Bumm[2] the staphylococcus pyogenes, especially the aureus, has been found in cases of septic endometritis, sometimes alone, but usually in combination with streptococci, in which instance it is termed mixed infection.

After much speculation we are still at a loss to know definitely why at one time the introduction into the system of certain microörganisms produces a mild form of sepsis, and at another, so far as our means of observation go, the identical bacteria produce the most virulent and rapidly fatal cases of septicæmia. This difference in effect we are able to explain only by differing degrees of susceptibility of patients and virulence of infection. The true explanation will no doubt eventually be found in a difference in the producing bacteria.

Of the saprophytic or putrefactive group the agents are bacilli and cocci usually in combination.

The channels by which the parasitic group gain entrance to the body are the lymphatic and blood vessels, the former route largely predominating. These they enter and actively penetrate

their way into the various tissues of the body, and, unless their progress is arrested by the resistence of the tissues, infection becomes general.

A characteristic feature of the human race, as pointed out by Welch[3] in contrast to lower animals,is the tendency to localization of inflammations. Accordingly in the less severe cases, if the infective poison be not too virulent, it is quickly encapsulated by a wall of inflammatory exudate to be subsequently either absorbed, or, if the inflammatory action is very intense, suppuration ensues, which must be regarded as an illustration of nature's conservatism. The infection may therefore be localized by inflammatory action to the uterus or adnexa or may progressively invade the neighboring tissues until it becomes general. Hence the familiar divisions: metritis, metro-peritonitis, peritonitis, pyæmia and septicæmia, which are but differing degrees of extension of the same process. The ptomaines and toxines elaborated by the saprophytic group are absorbed by the blood, and the intensity of their action depends upon the amount absorbed. It may be mild or very intense, rapidly producing death, in which case it is termed sapræmia. No pathological lesions mark the milder cases, and in the more severe form the autopsy may reveal nothing more than slight cloudy swelling and granular degeneration of the tissues.

In some instances, both forms of infection are found associated, which to some extent complicates the case. It is now generally believed that infection of the uterine cavity is introduced from without through the agency of hands or instruments.

While it is recognized that the vagina ordinarily contains microörganisms capable of producing infection, under normal conditions, according to Bumm,[4] they never travel beyond the internal os.

Infection of wounds in the vagina may therefore result from contained bacteria without their introduction by external agencies, but infection of the uterine cavity rarely so occurs.

Bumm[5] has called attention to the fact that it is possible for putrefactive bacteria to travel from the vagina into the uterine cavity by means of shreds of retained secundines, which may protrude through the internal os, and once having gained entrance become implanted on blood clots, fragments of placenta, or even the endometrium.

Having thus considered briefly the origin and modes of infection, let us see what practical deductions, bearing on treatment can be made. Prophylaxis, though it constitutes an element of

first importance, I shall pass with a few words, since such excellent rules are to be found in all modern text books, that it seems superfluous to dilate upon them. Its success depends upon a few simple directions which may be summed up briefly as follows: cleanly surroundings, clean hands and instruments, a careful preparation of the patient, as few internal examinations as possible, the complete removal of all blood clots, placental tissues and membranes, the immediate repair of lacerations of the vagina and perineum, should they occur.

The antiseptic vaginal douche upon which so much stress was formerly laid is now seldom used in normal cases, after confinement. It finds its place just before and during labor, especially should labor be delayed or from any cause many examinations or instrumentation be necessary. One point as regards prophylaxis deserves to be emphasized, and that is cleansing of the hands, for in many instances, it is to be feared, it is not done with sufficient thoroughness. Too frequently the hands, instead of being first carefully scrubbed with soap and water, are hurriedly thrust into an antiseptic solution, and the conscience of the accoucheur is at rest.

The first thing to be done in a case of suspected sepsis is to make a thorough examination of the patient. Not every rise of temperature demands vaginal douches or intra-uterine injections. Thus I have seen a case where the temperature rose to 105° F. on the fourth day after confinement, to rapidly fall, and convalescence resumed its usual course after a free bowel movement.

Hirst,[6] in the "American System of Obstetrics," very appropriately devotes several pages to the consideration of causes other than sepsis which produce elevation of temperature in the puerperal woman. When the conclusion is reached that the case is septic, a vigorous line of treatment should be instituted, even at the risk of being superfluous. The parturient tract should be carefully examined for points of infection to which our attention should be directed.

As we have seen, when pathogenic bacteria gain entrance to the body, unlike the saprophytic group they do not remain on the surface, but penetrate the tissues. Antiseptic douches, it is evident, therefore, will be of little use, except in the earlier stages, since their action at best can be only superficial, and the invading microörganisms having traveled beyond our reach, must be combated by other means. If lacerations of the perineum, vagina or cervix are found to be the point of infection, as will be indicated by an unhealthy appearance of the ulcer, cauterization with a saturated solution of the chloride of zinc, as

suggested by Garrigues,[7] is often successful if done sufficiently early.

The rationale of this mode of treatment lies in the hope of artificially creating an enclosing barrier which may circumscribe the invading microörganisms, and at the same time destroy those superficial ones with which it comes in contact. If the condition becomes localized in the uterus or adnexa, supporting and tonic treatment are the indications, assisted in the later stage by local treatment directed against the remaining lesion. Saprophytic bacteria, as we have seen, require dead tissue in which to develop. Accordingly, this form of infection is most frequently met with in cases of retained secundines. It is therefore common in cases of incomplete abortion, putrid births, and in cases in which the third stage of labor has not been complete.

The treatment consists in emptying the uterine cavity by the careful use of the curette, if the case be recent. This should be followed by the free use of the intra-uterine antiseptic douche, of which corrosive sublimate still maintains the first rank. Although it is capable of producing poisoning, its careful use is attended with little danger. For intra-uterine injections, which should always be preceded by a vaginal douche, a strength of (1-5000) is sufficient for all purposes, and if this be followed by washing out the uterine cavity with plain sterilized water, the danger from poisoning is practically eliminated.

This may be followed by the introduction into the uterine cavity of the iodoform suppository as suggested by Garrigues.[8]

At the same time, if prostration be great, supporting measures in addition must be used, as quinine and stimulants, and a liberal and easily assimilated diet should be allowed.

It is perhaps in this class of cases that curetting followed by the antiseptic douche has given the brilliant results that are recorded, and goes to explain the failures that have attended its use in others.

If the case is one of some standing curetting is not to be advocated, but the antiseptic intra-uterine douche is alone to be relied upon, with perhaps the introduction of the iodoform pencil. In these cases curetting is not entirely free from danger, and this may be explained from the fact that an exudate is formed about the focus of infection by the inflammatory reaction. If, now, this barrier be broken down and a fresh absorbing surface be created, enough of the elaborated poison may be taken up to seriously affect or even produce death of the patient. In surgical practice such cases are not uncommon.

Pelvic peritonitis, though usually recovered from, is not with-

out its dangers, as the formation of abscess and its extension resulting in general peritonitis. If suppuration occurs, drainage is the rational procedure and should be done as soon as its presence can be determined with certainty, for if left to itself perforation into the viscera or cavities of the body may take place, rendering the case far less favorable. The treatment of puerperal peritonitis is still the subject of much controversy. The surgeon, on the one hand, triumphantly relates the success which attends operative treatment and bewails the fate of those unfortunate patients who fall into the hands of the more conservative practitioner. The latter refers to good results from expectant treatment, and points out the dire consequences which may follow operation.

This seeming confusion is probably due to the failure to recognize its different forms. Those cases that terminate favorably on the expectant plan of treatment are no doubt in most instances cases of localized peritonitis, as recovery from general septic peritonitis, while it does occur, must be exceptional.

In considering these cases from a clinical standpoint, the sthenic and asthenic varieties should be recognized. The sthenic is progressive, and is marked by frank, open symptoms of pain, elevation of temperature, while the asthenic variety is insidious in its onset, and is characterized by a great prostration and a tendency to collapse.

It is perhaps in the sthenic variety that the most flattering results have attended the efforts of the surgeon, and evidence begins to accumulate that in the hands of skilled operators surgical interference is not only justifiable but the rational mode of treatment. In the asthenic variety the indications for operative interference are not so clear, for while he would escape the opprobrium of being unable to cope with the disease in question, the conscientious surgeon would pause and hesitate before subjecting his patient to the additional injury which must almost of necessity hasten a fatal termination.

As regards pyæmia and septicæmia, treatment is of but little avail, the vast majority of these cases proving fatal. Since we have no drugs which are antagonistic to the poison when it is once widely distributed through the body, the best we can do is to put the system in the most favorable condition in order that it may resist the inroads of the invading microörganisms.

The futility of antiseptic douches in these forms of the disease is at once apparent, and yet how often we see this line of treatment persisted in to the detriment of the patient by exhausting the little remaining strength.

Here stimulation should be pushed to the limit of endurance,

the diet should be nutritious and easily assimilated, and the action of the skin and kidneys should be looked after, as through them the elimination of poisons must largely take place.

Therefore to summarize:

(1) Puerperal infection is caused by two widely different groups of bacteria, which must be distinguished since they necessitate different plans of treatment.

(2) In infection by the pathogenic group of bacteria, local treatment is of little avail, unless instituted early, and it should be vigorously and systematically carried out, even at the risk of being superfluous.

(3) The curette should not be used except in the early stages.

(4) When infection is localized to the uterus and adnexa recovery is the rule, and tonic and supporting treatment the indications.

(5) If suppuration ensues the abscess should be drained as soon as the diagnosis can be made with certainty.

(6) Most cases of peritonitis which recover by the expectant plan of treatment are localized.

(7) In sthenic cases of peritonitis, surgical interference is not only justifiable, but the rational mode of treatment.

(8) In the asthenic variety operation is of doubtful utility, and contra-indicated if the patient is in collapse.

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[1]Bumm, Transactions German Gyn. Soc. *American Journal Obstetrics*, Vol. XXIV. Page 1267.

[2]Bumm, ibid.

[3]Welch, *American Journal Med. Sciences*, Nov. 1891. Page 444.

[4]Bumm, *Archiv. fur Gynakologie*, Band XXXIV. Heft 3.

[5]Bumm, ibid.

[6]Hirst, American System Obstetrics, Vol. II. Page 461.

[7]Garrigues, ibid. Page 363.

[8]Garrigues, ibid. Page 365.

DISCUSSION.

The following is the discussion on the paper read by Dr. HELEN W. BISSELL entitled

THE CARE OF PREGNANT WOMEN BEFORE AND DURING PARTURITION.

Dr. JACKSON: I am very much interested in this subject and exceedingly pleased with the paper. I agree entirely with Dr. BISSELL. The matter of the education of girls has been on my mind for years, as a matter that is a very important duty of the parent, and I was very much gratified to learn that the schools she speaks of have an instructor who is a physician, and who instructs the young ladies as to what they may expect as married women. That is as it should be. We all meet time and again women who, when they are married are thoroughly ignorant of everything relating to maternity. This is not as it should be. I agree with the paper in the amount and character of exercise. I insist that, provided a woman has a well ventilated house, her household duties are on the whole the best exercise she could have. Next to that comes riding, but of course too much of that is not good. I have known a great many cases of premature labor brought about by riding, even by riding on the cars. As to the food, I have paid a good deal of attention to that subject within the last three or four years with regard to the coming child, and it has seemed to me that the pain of delivery and the dangers of delivery can be largely avoided by a proper selection of articles of diet. Now, I noticed in the East, where I came from, that we never have so much trouble with laceration of the perineum as we have in the West, and after quite a long time it occurred to me that I was having a run of hard cases, but I found that the rule here was to have children born with a large and hard head. It seems to me the difference lies somewhat in the diet. If you go back through New York State, and all through that part of the country, you will find that the women eat more fruit. It is a common thing to hear them state that that is a particular diet they crave, fruit and often tomatoes. In consequence when their children are born they have soft bones and pliable joints, and moulding of the head, which allows a great deal easier delivery. I believe that the difficult and painful deliveries so common with us here are largely due to the quantities of meat and flour we eat so much of here in the West, which is our diet two or three times a day. I refuse my patients too much meat and flour and put them upon all the fruit they will eat, especially recommending tomatoes.

You can get good canned tomatoes all the year round, and in addition to this I put them on good vegetable diet as soon as the vegetables come upon the market. I believe I get good results from this procedure, and I have never seen any rickety developments from it. I live in a town where I have never seen a case of rickets until the other day, and that was a child of apparently the healthiest woman in the county. I was called to the case, but the child was born before I could get my bottle of chloroform, the birth being attended with considerable pain. The woman was not a large woman, being only about half as big as the author of the paper. I believe that the pain of delivery in a majority of cases is due to rheumatism. There is a rheumatic inflammation of the muscular tissue of the uterus. My preparatory treatment of women when they come to me before delivery—and they often do report before—is to give them some rheumatic treatment, generally the cohosh colchicum, aconite and belladonna tablet triturate. I think this works very nicely, with either the blue or black cohosh. Now, as to the management of labor, I noticed the paper did not touch upon that, and I don't know that it is necessary to say anything about it. Still I believe that there is altogether too little done for a woman after delivery. I think it is a mistake to assume as soon as the baby is born, that we have got through with our patient. I am getting more and more every day to believe that it is wicked for a doctor to allow his patient to have broken or caked breasts. With proper cleanliness and careful watching of the case, we do not need to have even a caked breast. If I should see any indication of that kind, I would give them a little belladonna. At any rate I give them a little belladonna to quiet the activity of the mammary gland, and I thus avoid, not only the caked breast, but also all the pain that there comes with too rapid filling of the breast with milk.

Dr. TOMLINSON: I have been very much interested in the paper, although it is some years since I have had any obstetric practice. I used to have considerable experience, however, and from that experience I formed a good many opinions. I was particularly interested in regard to what Dr. BISSELL had to say about the relation of the child's head to the pelvis. There is one explanation of that, which she did not call attention to, and I don't know whether she overlooked it or not. It is a well known fact that taking all classes of population together, difficult labors increase in frequency as social admixture increases, besides it is very common to find a small woman and a large headed man united in marriage and the fact that

there is this disproportion between the two, accounts for that disproportion between the head and pelvis which produces these painful labors. Now, in regard to the pain of delivery. In the lower and uncivilized races, this is comparatively light. The nervous system in those races is much less developed than among the highly civilized races. One of the results of civilization has been to increase the nervous susceptibility of the individual, and along with the capacity for enjoyment has come the capacity for increased suffering. To put it in mechanical terms, an incident force sufficient to produce a series of vibrations in the lower individual, would in the higher individual produce a more intense series of vibrations and consequently greater suffering. There is another interesting fact that I used to observe in pregnancy, and that was the influence of family and social traditions upon the woman's condition during pregnancy. I mean those traditions that are handed down from mother to daughter. Every woman expects that she is going to be nauseated when she is pregnant, and as a rule, she is. But I think fifty per cent. of them are so affected because they knew that their mothers were so affected before them. I think it is a fact that a large majority of women are only sick with the first child, and possibly in some cases with the second. Of course there is another explanation of nausea during pregnancy, and that is, that it occurs as the result of the stretching of the parts on account of the enlargement of the child, on account of irritation and the reflex results from it. I have seen so many cases where I think there was a true neuro-mimesis that I cannot help but feel it is much more common than I used to realize. I think a great many more women are nauseated during pregnancy because their mothers were before them than for any other reason. In other words, when they recognize their condition, from that time they generally become nauseated. It is a fact also that there are pathological conditions existing in the parts themselves, or there may be a general disturbance of nutrition which in itself operates to disturb the digestion. We know that a sympathy exists between a woman's sexual organs and her nervous system, so that it has an influence.

It seems to me that pregnancy and labor are physiological conditions, and I think we might account for many of the ordinary difficulties which arise in labor from a physiological standpoint, and not hunt for pathological conditions to explain them. Another reason which I think will account for a great deal of the difficulty attending pregnancy and labor, in modern wives, and especially among cultivated women, is this: One

of the tendencies of so-called higher education has been to cultivate a feeling of resentment of sex, and resentment of the fact that they have to perform the part which they do towards the reproduction of the species. Again, the influence which the effort to prevent conception exerts, or if it does take place, the terror—sometimes abject—that follows, together with the fact that this interesting condition interferes with the regular routine of their life and curtails their pleasures, social and otherwise, and the knowledge that there must follow a time when they must give up their ordinary occupations and take care of their families, all tend to make pregnancy and delivery a time of pain and danger. Now these things, to a person who looks at the matter from a purely practical standpoint, may appear absurd; but I know they are not absurd, because of my own observation. It is my belief, formed by reason of my experience and more largely from my observation generally, that the disasters which follow pregnancy are due to a great extent to this factor in the mental life of modern women, which is one of the most common causes of disturbance during pregnancy, and of the disastrous conditions which sometimes follow childbirth.

Dr. MARY S. WHETSTONE: I was very much pleased and interested with the paper, and heartily endorse what the doctor said. I am very glad that the doctor directed our attention to the necessity of our girls being educated concerning the mysteries of womanhood and maternity. It was my privilege, not long ago, to lecture to a school of young ladies, and I asked the principal's permission to talk to the girls on this subject. I was very glad to notice how eagerly and with what earnestness the young ladies listened to me. Afterwards I was approached by the young ladies and their mothers and thanked for talking to them on this subject. We all know that there is an idea prevalent that it is not proper to speak on these subjects. I do not know who is going to correct this error unless it be the physicians. Let the physicians advise the mothers to instruct their daughters in the proper way, and in a dignified way, and not let them trust to getting this knowledge in an improper and ignoble manner, from their associates. Let them also teach them the dignity of womanhood and maternity, and then they will not fear to become mothers, nor will they resort to many of the practices now prevalent, and go through their pregnancy with this idea that it is something of a bore, or ignoble. There is a great work here for physicians, and we shall have better success with our patients if we do it, because we shall then get the coöperation of the patient.

Dr. FISHER: I am glad that this matter has been called to the

attention of the profession. Physicians should see that young girls are made to understand what may be expected of them. I am glad that the subject has been brought out as fully as it has, for it is a most lamentable condition we find existing in society, that of fear of maternity, and even cases of young girls frightened at their first menstrual period. We often find this latter even now, and we find many women now living miserable lives who might have been spared all that if their mothers had instructed them properly.

The following is the discussion upon the paper read by Dr. ROTHROCK entitled

RATIONAL TREATMENT OF PUERPERAL SEPTIC INFECTION.

Dr. PHILLIPS: This is a very able paper and must have demanded a great deal of study and time for its preparation. There is one criticism, however, that I feel bound to make, and that is in regard to injecting the uterus with the bichloride solution at any time after confinement or at any other time. I do not favor injecting the uterus with the bichloride solution or any other antiseptic which may produce peritonitis, providing it lodges in the peritoneum. During this time the Fallopian tubes are open, and if you inject the uterus the fluid may possibly pass through the Fallopian tubes and set up peritonitis. I think as practitioners of medicine, we are not justified in taking those chances. I would not want to see a sister of mine treated in that way, and I would not treat a woman in that way after confinement. I think we would be taking too many chances. In my opinion the best antiseptic is good, sterilized water and plenty of it. Another protest I wish to make against the paper is this: I think if a portion of the placenta has been left, or any portion of the membranes, the quicker they are removed the better. If left there it forms a nucleus for septicæmia to work on, a nucleus for blood poisoning, and the longer they remain the greater the danger to your patient. The quicker they are removed the better. As soon as you learn that any portions of the placenta are there you should remove them at once. As far as bacteria are concerned I will say I am not much of a bacteria man, but right here I wish to say one thing, and I think this Society should sound it abroad, that we have one form of bacteria, or one form of poisoning which produces puerperal fever and nothing else. I think physicians are not justified in going from case to case until a certain length of time has elapsed, and the bacterial or malarial poison which produces puerperal fever has disappeared. It is in the observation of this precaution that our success in practising

obstetrics lies. It is not enough to wash your hands, but you must look to your lungs, your hair and whiskers. You have inhaled this poison and no living man knows how long it will remain with you. I repeat that no person should attend a case of confinement for at least four weeks after he has lost a case of puerperal fever. I do not care how many antiseptics have been used, the poison has been inhaled, and by attending the patients you endanger their lives. I think that our success as obstetricians lies in the observation of this rule.

Dr. FISHER: If you discard the theory of bacteria, of what, then, does this poison consist?

Dr. PHILLIPS: I do not know that I have discarded the theory of bacteria. I do not know what the poison is, and for that matter I do not think any man knows what the poison is that produces typhoid fever any more than that which produces puerperal fever. It is a special poison, and that is enough for you and me to know. We should always be cleanly and aseptic, and if we have been or are engaged in treating a case infected with a special poison, we ought not to go into the presence of a woman in confinement. Theory and fact are two different things, and I am talking about the latter. I know not what the poison is, but I know there is a poison which produces puerperal fever, although I do not know just how the germ looks. I believe that we have no right to endanger a woman's life by subjecting her to the possibility of infection.

Dr. JACKSON: I have had two very interesting cases of puerperal fever in the last eight or nine months. They were not cases, I am happy to say, that I infected myself. The first was a case that occurred in another man's practice, where he attended a case of erysipelas and went directly from that house into the other. Several days after delivery, during which time he had sent medicine and told them he feared to re-visit because he was afraid he might poison her, they called me in and I found a very typical case of puerperal fever. Of course I resorted to antipyretics and douched four times a day. I went there systematically, and used one douche and another, carbolic acid and boracic acid. I finally saved my patient with the bichloride injection, although she had peritonitis in addition, and also dropsical effusion.

Dr. PHILLIPS: Do you know whether the bichloride produced the peritonitis or not?

Dr. JACKSON: I think not, doctor, because the patient had peritonitis several days before I used it.

One interesting feature of this case was, that she got

so she could sit up a good deal of the time, but I could not get her strong, and finally, at the end of six months she suddenly died of determination of the trouble to her brain. She had what I called cerebritis, and the doctors that saw her with me agreed that it was some inflammation of the brain. The undertaker, who is a very experienced man, and who has embalmed a great many bodies, told me that he didn't get out of that woman's body, upon opening the vessels, over a quart of blood, and that was as black as any ink he ever saw. I could not believe that it was due to brain complication, and think it must have been due to septic conditions caused by the puerperal fever. I had another case afterwards of a woman who came to that town especially to escape puerperal fever. In the section of the state where she was living, many women were dying from puerperal fever, and she came down to our town, bringing her clothing and making preparations for delivery. She had a very tedious labor with a great deal of laceration, and finally developed puerperal infection. I did not dilly dally with anything else, but went right about my bichloride injection in her case, and had no peritonitis, nothing but a pretty prompt recovery. In two or three weeks I had her fairly out of danger, and I think that the bichloride was the best thing I could have used. I alternated with it an injection of boracic acid.

Dr. PHILLIPS: The only point I made in the cases was this: It is dangerous to throw a poisonous fluid into the uterus, for there is danger of its passing into the peritoneal cavity and causing peritonitis.

Dr. JACKSON: I was between two fires and I thought the bichloride was the best treatment.

Dr. PHILLIPS: I have attended a great many funerals that resulted from injecting the uterus that way.

Dr. JACKSON: There is something in skill doctor. I think there is such a thing as passing an inter-uterine tube clear up into a Fallopian tube, but I never did it and never want to. In the cases I have spoken of I introduced a speculum to keep the vaginal portion of the canal open, and threw my water from a suspended water bag after the manner of a fountain syringe. I washed out those two cases that way, and I think that bichloride is by all means the best thing for that purpose I ever saw. In the last case I visited the woman repeatedly, finding her with a very high temperature and very nervous. In such cases after using the bichloride, before leaving the house I have brought her temperature down two degrees. I have done that repeatedly with a simple injection, and I am surprised at it. I used a double

current catheter in the first place, and I think it was all nonsense Up to within five or six weeks after delivery, there is plenty of room to use an ordinary catheter to throw in your douche, and let it wash out all right. I take a glass tube and mould it in the shape I want and use that on the end of the tube.

Dr. FISHER: I hardly agree with the doctor in regard to its being all nonsense to use a double current catheter. I have always used one where I found it necessary to wash out the uterine cavity, when the large tube would almost fill it, or where the cervix seemed unduly narrow, and where it would have been very doubtful whether much of the fluid would return of itself.

Dr. ROBERTSON: I have had some little experience in obstetrics. I have never yet had a case of puerperal fever in over seven hundred cases. The only precaution I take in cleanliness is to wash my hands thoroughly in warm water or nearly hot water with good soap and then bathe them in alcohol. I must say that I have not seen a case of puerperal fever in nearly ten years, in the practice of any regular physician. I have seen a number of cases of puerperal fever, but in no case had a regular physician attended the parties. I have had a number of cases following confinement by midwives, and in one instance I had three cases within three weeks, all of which emanated from the same source, from a midwife. I think the reason for these cases was that the midwife was not clean, and she evidently carried the disease from one patient to another. I have also seen one case following the practice of an irregular practitioner, and in this connection I will say that I have frequently noticed this man's hands, and they were always in a very uncleanly condition. He has quite a large practice in this line, and a still larger one in miscarriages. I think where a physician is ordinarily careful there is but little or no danger of septicæmia. In the last three or four hundred cases which I have attended, I have never used any of the preparations of ergot. I got an idea into my head that the ergot, when used as it is in almost every case, indiscriminately, produced a tonic contraction of the uterus, and retained the lochial discharges, and in that way produced these conditions. So in the last few years I have not had occasion to use ergot, and I feel satisfied that I have had good results from the non-use of this remedy.

Dr. FISHER: Do you use any means to secure contraction after delivery?

Dr. ROBERTSON: I only use pressure on the outside.

Dr. MAYO: This question of obstetrics has a common sense view as well as a theoretical one, or a comparative view. I

have been a practitioner a good many years and attended a great many cases. I have necessarily attended many cases in houses that have been filthy in the extreme, where the woman herself was filthy, and all her surroundings were as filthy as they could be. I have seen them get well, they generally do under those circumstances. I have also seen cases of what we call infectious puerperal fever where all the surroundings and conditions were extremely favorable for recovery, and yet the patients died, as they sometimes will. It makes no difference how healthy a person may be, or how clean their surroundings are, the only question is, is the necessary condition there for this poisoning. I am a bacterian in theory, and to myself at least a bacterian in fact. I believe you require a certain condition to produce the bacteria that causes septicæmia. It is true that apparently the same bacteria that we find in erysipelas in man will produce this septicæmia in women. If a physician attend one woman in that condition, the poison follows him when he leaves that patient. I have known this to be the case in five or six different houses, some of them cleanly in the extreme, and others filthy. Of course the confinement of women is a physiological condition, and the parts are generally prepared to take care of themselves and almost always will, without any of this finesse that we have talked about. I would like to see this discussion take another form. In speaking of septicæmia, the mere statement that a man has had a case or several cases of septicæmia gives us no information in regard to its peculiar conditions or why he uses this remedy or that remedy for such and such purposes. It would be proper to give us its exact pathological condition, telling us what he finds there and what he does for it. If he uses bichloride let him tell us what he uses it for. There is a pathological condition in all those cases that ought to have been given, and then we could have a knowledge or a fair understanding of the case. Now, very often, what we term septicæmia is simply a condition of fever arising in the body, that we often meet with, and that passes away quite as rapidly as it comes. The temperature may run up to 103° or 105°. It has been stated that a simple cathartic will reduce it and stop the whole thing. Now, on the contrary, if you will state that we have, for instance, a condition of the uterus in which there is an exudation of a bad smelling fluid, copious in quantity, or that the woman has an exceedingly feeble pulse, and state everything that indicates a tendency to septicæmia, then we will have some knowledge as to whether it was a case of septicæmia, and if so, what the conditions were, and we shall be

able to clearly understand it. That is the way all cases ought to come before us. Now, with regard to that undertaker's statement, I do not know what the undertakers do in Dr. JACKSON's town, but as far as I have followed them they undertake to get a good deal of money out of a person by a pretense of embalming. That has been my experience so far as undertakers are concerned. The character of the blood that was drawn had no significance whatever, and gives us no information. In discussing these cases and making these comparisons, there is another point, and that is, the fear of this poison being about your clothing somewhere; we cannot tell where it is, for we cannot see it; it is the same way in diphtheria or scarlet fever, you get this poison about your person and sow the seed, there are your germ seeds sown, and there are your germs produced. I believe that this is a bacterial condition, but unless you can follow your cases as closely and surely as you can a case of diphtheria, for instance, you do not know whether is is the bacterium of septicæmia or not, and it may be you will be doing a great deal of harm in administering these injections of bichloride solution, and so on, simply because the woman is in a high state of fever, when there is none of this poison about her that produces the septicæmia.

Dr. JACKSON: I would like to ask how the doctor determines when the patient has puerperal fever.

Dr. MAYO: I am not giving any cases; I am simply discussing the ones before us.

GENERAL MEDICINE.

J. W. ANDREWS, M. D., CHAIRMAN.

PLEURISY WITH PURULENT EFFUSION.

During the winters of 1890 and 1891-92 it was not the exception but the rule for pleurisy to terminate in purulent effusion. I do not now refer to the slight stitches in the side so often diagnosed pleurisy by the physician as well as by the laity, nor do I refer to a light pleurisy circumscribed to a spot not more than half as large as a man's hand which almost always terminates in resolution; but I refer to those cases where half or possibly the major part of the pleura becomes the seat of an active inflammation. Why did these pleurisies so often terminate in the effusion of pus? This is a question I have often asked myself, but have never answered. I think, however, I can answer it very satisfactorily if some one will explain to me the etiology of la grippe. Neither age nor sex was exempt from this form of pleurisy. The delicate child in the poorly ventilated schoolroom, and the workman in the quarry were alike subject to it, so that we cannot seek for the cause in the hygienic surroundings of the patient.

No physician is excusable for failing to diagnose a case of pleurisy with purulent effusion, for the diagnosis is very easy. There is but one other disease that it might be mistaken for and that is pleurisy with serous effusion. In the first stage, that of invasion, the symptoms and signs are alike in all forms of the disease, and as I am now dealing with purulent pleurisy, I will dismiss the first stage by saying that I know of no signs or symptoms in this stage of invasion by which suppuration can be anticipated. It usually occurs several days after the onset of the inflammatory symptoms; but I had one case in which suppuration took place within 24 hours.

The symptoms of the second stage of purulent pleurisy are of some diagnostic value, but not much. We will nearly always find an elevation of temperature, pulse rapid and often feeble, respiration increased in proportion to the amount of effusion, and cough shallow, dry and hacking. Patient has chills or chilly sensation and night sweats. He or she looks sick. Perhaps in all of these symptoms the chills and night sweats are of the greatest diagnostic value. We may have both of these, however, in either pneumonia or in pleurisy with serous effusion.

All the other symptoms are common alike to purulent pleurisy, serous pleurisy and pneumonia. We must therefore go beyond the symptoms to form our diagnosis of our disease else we will often be culpably mistaken.

Let us look to the physical signs of purulent pleurisy. Inspection, especially posteriorly, shows increased fulness on the affected side. In this we find exactly the same condition in serous pleurisy, and in pneumothorax, but not in pneumonia. Inspection also shows loss of motion on the affected side. This is true, however, of all the diseases above mentioned. Inspection gives us no differential knowledge, as between pyothorax and hydrothorax. In pneumothorax we do not find the intercostal spaces so fully obliterated as in the two diseases last named. But by inspection we can almost surely exclude pneumonia, for in this disease (second stage) we do not find increased fulness of the affected side, neither do we find partial obliteration of the intercostal spaces. Palpation gives entire absence of vocal fremitus on the affected side. This is also true in serous pleurisy and in pneumothorax, though in the latter not so universally and markedly so, while in pneumonia vocal fremitus is increased. The skillful physician could therefore shut his eyes and pretty well approximate a diagnosis of purulent pleurisy. He probably could exclude every other disease except pleurisy with serous effusion, for he could not only in this way determine the absence of vocal fremitus, but he could also discover the increased fulness of the affected side, and the obliteration of the intercostal spaces. Percussion elicits absolute flatness on the affected side, to a point as high as there is any pus. The same is true when there is serous effusion. Pneumothorax gives us a tympanitic resonance of an amphoric or metallic quality over all of the affected side. In pneumonia percussion elicits dulness, not flatness. Again the skilful practitioner can shut his eyes, open his ears, and by percussion alone approximate a diagnosis of purulent pleurisy; but as before he cannot know whether he has purulent or serous pleurisy.

Auscultation elicits usually entire absence of respiratory murmur. This is likewise true when the effusion is serous, and it may be true in pneumothorax, though not always. Here we find a marked difference between the disease under consideration and pneumonia in the second stage, for in the latter we get distinct and well marked tubular breathing. It will be observed that in giving the points of diagnosis and differential diagnosis of pleurisy with purulent effusion, I have said nothing about

an enlarged spleen or liver, either of which might be confounded with this disease; nor have I said anything about tubercular infiltration of the lungs; for these are scarcely within the scope of this paper. The latter, however, to my knowledge in two cases has been diagnosed where purulent pleurisy existed, and the death report gave the cause as consumption, whereas the primary cause was consumption of the physician's brain who made the diagnosis.

I have tried to show that in making the diagnosis of pleurisy with purulent effusion, by a careful physical examination every other disease may be excluded except pleurisy with serous effusion. While we may determine approximately by the appearance of our patient whether he has pus or serum in a pleural cavity, yet there is but one way to be definite on this point, and that is by the employment of the aspirating needle. An aspirating needle with a tolerably large calibre must be taken, and a point on the axillary line in the 8th or 9th intercostal space may be selected. In introducing the needle it should always be remembered that the ribs overlap a little, hence the needle should pass upward and inward. It is not necessary to pass it ordinarily more than two inches, when we will be enabled to get pus or serum, and our diagnosis is complete. Let me warn you against using an ordinary hypodermic needle for this purpose. It is too small; it is not reliable. I have used it several times, and with negative results, and have immediately followed with a medium-sized aspirating needle and got pus. Before introducing our needle it should be rendered thoroughly aseptic, and the side for a considerable area around the selected point of puncture must be well washed with some antiseptic solution. Having made our diagnosis, having determined that the pleural cavity contains pus, what shall our treatment be?

There is but one line of treatment that will save our patient's life, and that is local. Of course in this disease as in every other adynamic disease, especially when there is the formation of pus, we should use constitutional treatment. The local treatment consists first not in introducing an aspirating needle and drawing off the pus; not in making a small valvular opening and allowing the pus to escape; but in making a good, large, free opening and completely evacuating the pleural cavity of all the pus there is in it; second in thoroughly washing out the cavity with a warm bichloride solution, about 1 to 3000; third in introducing a drainage tube, and over this a good, large, absorbent, antiseptic dressing; and fourth in the daily repetition of washing out the pleural cavity with a warm bichloride solution

(increasing to 1 to 2000), and applying the antiseptic dressing. This with good food, good air, quinine, iron or some other suitable tonic treatment will cure 90 per cent. of our patients affected with pleurisy with purulent effusion.

In a series of cases treated by my able partner, Dr. Steel, of Mankato, and myself in the spring of 1891, the point which we selected for puncture was in the majority of cases on the axillary line in the 9th intercostal space. We usually, though not always, placed the patient under chloroform in making the incision. This we did in order that we be not embarrassed in making a good opening. We attached a No. 10 gum catheter to a fountain syringe, introduced this well into the pleural cavity, and by the side of this a large drainage tube. In this way we would continue the stream of bichloride water through the pleural cavity until it came out clear. In several cases we produced slight ptyalism, so that we were compelled to weaken our bichloride solution to 1 to 8000 or 1 to 10,000. We tried to cure one case by making a valvular opening in the side. This was washed out daily the same as the others, but it did not do well. The temperature kept up, the pulse feeble, appetite and nutrition poor. Finally after treating the patient for about two weeks in this manner, we anæsthized her, made a free opening, put in a drainage tube, and she began at once to improve.

Ladies and gentlemen, as I have before stated I believe that 90 per cent. of cases of purulent pleurisy can be cured in this way. I believe if thorough treatment of this kind were instituted in our purulent pleurisy cases there would seldom arise the necessity of exsection of one or more ribs. I believe that the latter operation is often unnecessarily resorted to. While the case might be equally well cured after rib exsection, still by this operation we open up a new avenue for infection (the ends of the bones), and the deformity after recovery is much greater.

MASSAGE IN CERTAIN DISEASES OF THE EYE.

J. W. Thompson, M. D.

Mr. Chairman and Gentlemen:

In communicating to you my experience with the massage treatment in diseases of the eye I shall be as brief as possible.

I have, during the past four years, employed this method of treatment in various ways and with fairly good results in several different though more or less analogous diseases of this organ. Four years' experience and observation, however, in the use of a method of this nature are worth more than a volume of mere

theorizing on the subject, yet in a somewhat limited practice they are scarcely sufficient to establish many precedents even in any important therapeutical measure. It is a well known fact that every branch of study which can at all claim the character of a science requires a correct ascertainment of the data from which we are to reason, and a correctness in the process of deducing conclusions from them. In incorrect and illogical reasoning is to be found the true source of a multitude of errors.

The best way to arrive at the truth is to be very careful in the use of the means which we employ in its discovery. In medicine it is not always possible to reason from analogy, for it often occurs that one remedy is capable of producing similar results in quite dissimilar ways. Physicians above all men should be the most careful and exact and not confound assertion with fact or mistake hypothesis for truth. Many years since F. C. Donders, the celebrated writer on the refraction and accommodation of the eye, called the attention of the profession to the massage treatment, as did also Meyer and several others of almost equal reputation for scientific observation.

They first suggested its employment in those nebulas and leucomas of the cornea that had proved very stubborn in yielding to other well known therapeutic agents. These observers, so far as I am able to inform myself, do not state to what extent this treatment may be employed without producing an injury in certain cases. They do not give us any data by which we may be guided in its use and tell what the particular results have been in their hands. They speak of it rather in a general sense and leave us with a favorable impression in regard to its use. From what I was able to gather from these authors I was induced to give the remedy a trial in a very stubborn and unyielding case of leucoma, which had most successfully resisted all attempts to produce any results what ever by the most faithful employment of calomel, yellow oxide of mercury ointment, etc. At first I was a doubting Thomas and resorted to it as a dernier measure. I need not say I was surprised in the course of ten days or two weeks to note a decided improvement. I continued the treatment daily for a period of two months, and at the end of this time, there was scarcely a vestige of the leucoma remaining. This induced me to experiment further with the remedy and to give it a wider range of application by extending it to other cases differing somewhat in appearance though analogous in character, and the results were in many instances gratifying.

Before proceeding further it will be in place perhaps to com-

municate to you my method of employing massage. I use the tip of my index finger and apply it to the centre of the upper lid tolerably near the edge and in about the same location on the lower lid, and thus employ the lid itself with which to produce the friction upon that part of the globe I wish to massage. The motion must be rapid and the pressure regulated in accordance with the effect designed to be produced. There are two directions of the movement to be employed: radial and circular. I use the former oftener than the latter and prefer it for three reasons: (1) It is applicable to a greater number of cases. (2) It enables me to apply the remedy to a special section of the globe. (3) The engorged vessels run more frequently in this direction and consequently their contents are more freely acted upon. At the first two or three sittings I do not employ much pressure, but later on I increase it as the exigencies of the case may demand. The length of time that I employ it, at each sitting, is also regulated in accordance with the demands of the case. This varies from one minute to five minutes. I use a fresh section of the globe at each sitting, and when the case will tolerate it I give the patient two sittings daily. The finger must be made to apply itself as evenly as possible to the globe, i. e., the direction of the motion must be changed so that it is made to follow as evenly as possible the curvature of the globe. Experience has taught me that it requires a considerable amount of practice to become expert in this manipulation. I practice it with much care and precision. I use the circular motion in the region of the sclero-corneal junction. Some cases will not tolerate a treatment oftener than every alternate day, while others will bear even three treatments each day. The remedy is a very active one and my experience with it has taught me that one must exercise his best judgment in its application. In short, like all other remedies, it must be adapted to the exigencies of the case. Those who have had no experience with this treatment as applied to the eye will be surprised perhaps to witness its powerful effect when actively and properly applied. After I began the use of the massage treatment and observed the advantages it afforded, the idea occurred to me that it might prove advantageous to combine it with those medicinal agents usually applicable to the case in hand. For example, in those corneal troubles where the yellow oxide of mercury ointment might be indicated, to use this remedy in conjunction with the massage, and thus, perhaps, obtain a more rapid and satisfactory result than could be obtained with either of the remedies singly. In a nebula of the cornea the chief ad-

vantage to be derived from the use of the yellow oxide of mercury or calomel is, I think, through their stimulating action.

I have always regarded the action of calomel when dusted into the eye as partially if not wholly mechanical, and the same, perhaps in a less degree, may be said of the yellow oxide. The massage should, I think, be regarded as mechanical in its action, yet quite different in its degree and character from either of the above mentioned remedies. The former is active while the latter is passive. Hence their combination was quite suggestive of more numerous and beneficial results. After giving them a careful trial I was not disappointed in my expectations, and I now seldom in cases of nebula of the cornea employ the one without the other.

As the result of corneal ulcers, pannus, keratitis and allied affections, there is seen a little thin nebula directly in front of the pupil, which lowers the sharpness of vision so that the patient, for such he becomes, can with great difficulty read very coarse print. Perhaps this nebula has existed for many years and has resisted the action of every known medicinal agent, and the victim has given up all hope of obtaining relief by the use of medicine and seeks the oculist with the hope of getting a pair of glasses that will improve his vision. Every practitioner of medicine has seen cases of this character and has had more or less experience in treating them. He has dusted in calomel and used yellow oxide of mercury ointment without any apparent benefit. In addition to this treatment in these cases I have employed the massage thoroughly and carefully once a day and twice daily if practicable, and in a few weeks have seen the nebula disappear and the sharpness of vision fully restored. It is in this class of cases that my experience with massage has been the greatest. It seems to supply that kind of stimulation necessary to favor the absorption of those extraneous elements, the presence of which can only be advantageously seen under the oblique illumination, when they appear to be situated in and just beneath the corneal conjunctiva.

In the chronic forms of keratitis I have had some experience with the massage treatment, but more especially with those cases of pannus arising from roughened, œdematous and granulated lids. I recall a case of this nature in which there was a marked scrofulous taint. After the lids had become apparently well and the œdema had been mostly absorbed, the pannus persistently remained. The sharpness of vision equalled only 20-200 with either eye. In this instance I used the massage alone and gave him at first one sitting each day for three minutes. The following week I gave him two sittings of two minutes each, and at the

end of this week there was a marked improvement so that he began to see objects much clearer. I continued the treatment two weeks longer, and the cornea cleared to such a degree that he could read 20-30.

In cases of phlyctenular ophthalmia, which are sometimes very unyielding and persistent, I have used this treatment with very excellent results. About two years since a young man who had been a great sufferer from this form of ophthalmia, consulted me. He had been a victim to it for over two years. During this period it had disappeared several times, only to return again in a very short time. He had but two or three small pustules near the sclero-corneal junction when I saw him for the first time. He informed me that in a very short time after one crop disappeared another appeared. Each crop of pustules left a slight deposit in the cornea, till the entire circumference of the cornea had become so hazy that the iris could scarcely be seen. Internally I directed him to use quinine and cod liver oil. I immediately began the local treatment with yellow oxide of mercury ointment and massage. Before going further I might remark that he had used the yellow oxide a great deal before I saw him; but, however, I continued the use of it with the massage added. I gave him two sittings each day. At the end of three weeks the cornea began to clear, and at the end of two months the haziness had entirely disappeared. He continued the tonics for a time. I saw him about three months since and there has been no return whatever of the disease. I might occupy more time with this class of cases, but what I have given are perhaps sufficient for the present purpose.

Episcleritis is an affection which usually confines itself to the temporal side of the sclerotic near the insertion of the external rectus muscle. It has usually a smooth surface and is of a dusky red color. The conjunctiva is sometimes quite red immediately over it, and occasionally there is some chemosis. The dark hue of the swelling is occasioned, I think, by the passive condition of the congestion. In some patients it presents an irritable form and is quite painful, while in others the chief annoyance is the disfiguration. Of the numerous affections of the eye this will frequently prove to be one of the most incorrigible and unyielding. I have used the massage treatment in three of these cases and was much pleased with the results. They were cases that had been the rounds and had received both good and bad treatment. They were, of course, in the chronic form when I first saw them, and it is in this form, I think, that the massage is

the more applicable. In the acute form of this disease I have had no experience with this treatment.

The radial form of the massage movement is the form I employ the more frequently, because it empties the vessels more thoroughly of the blood and lymph even to the finest ramifications in the sclero-corneal junction than does the circular motion. It acts not only mechanically in pressing the blood out of the vessels, but it also acts as a stimulant to the vaso-motor nerves which cause the vessels to contract and thus diminish their calibre.

THE MODERN VIEW OF TYPHOID FEVER AND ITS TREATMENT.

TALBOT JONES, M. D.

Visiting Physician to City and County Hospital; Consulting Physician to Bethesda Hospital, etc.

A disease which annually attacks 300,000 persons in the United States and causes 40,000 deaths is surely of sufficient intrinsic importance to enlist the thoughtful study of all progressive physicians.

This disease has been in the past so often and so well described by the master minds of our profession, and especially by Murchison, that little has or can be added to its mere scientific description or historic interest. Many of the older writers, while they could not penetrate the veil, did actually foreshadow much that bacteriology has since discovered regarding it.

Little additional knowledge has come to us from the clinician, scarcely more from the pathologist, but the bacteriologist has thrown a flood of light on the subject during the past few years. Facts have indeed rapidly accumulated, and the issues have become so narrowed that the time has arrived when we can form pretty definite ideas as to the intimate nature, mode of origin, etiology and behavior of typhoid fever. We now know that it is an acute, infectious disease in which, as in phthisis, pneumonia and diphtheria, a bacillus plays an essential part.

The typhoid bacillus discovered simultaneously by Eberth and Koch in 1880, and its peculiarities and mode of growth investigated especially by the former, is difficult of separate cultivation because the alvine discharges contain also other micro-organisms (hay-bacillus) which liquify the medium before colonies of typhoid bacilli appear in it.

Since the discovery of this pathogenic bacillus our views as to the etiology of typhoid fever have undergone considerable

change. The germ is found practically in every case of typhoid fever. The morphology and microscopic characteristics of the Eberth bacillus need not be described, but it does not take a stain readily, as does the tubercle bacillus, and for a long time it could not be investigated owing to difficulty experienced in separating it from other microörganisms found in the dejecta. Recently however this difficulty has been overcome by Koch who succeeded in isolating it and growing it on dry gelatine plates. Animals in great numbers have been inoculated with the bacilli, but thus far nothing but failure has attended the same, since none of the lower animals are susceptible to typhoid fever. While this link in the chain of proof is lacking, nevertheless our best bacteriologists look upon Eberth's bacillus as the direct cause of typhoid fever. The invariable presence after death of this organism in the intestines, the mesenteric glands, the spleen, and sometimes in the liver, and in the blood drawn from the spleen during life, has been verified by so many competent observers that its connection with the disease can no longer be doubted.

Accepting then fully and unreservedly the relation of cause and effect, I shall now ask your attention to problems relating to typhoid fever along the following lines of thought:

1. As to the mode of propagation.
2. Its prevalence at particular seasons of the year.
3. The causation of the symptoms present in its various stages (early and late).
4. The conditions that favor or produce its acute infection of the tissues.
5. The postulate that typhoid fever is in fact a dual disease, owing to mixed infection.
6. The rational means for treating it.

At the outset of our inquiries the question arises. How does the bacillus get into the human body? At the present time two totally different views are entertained by their respective advocates: (a) It is maintained by one set that the poison is not transferred directly from man to man, but that it must first undergo a kind of maturity in the soil and thus obtain an infectious power. When this maturity has taken place and the poison fully ripe, the contention is that it then enters the body through the respiratory organs. (b) The view of the second group of observers may be stated as follows: The typhoid bacillus can and does thrive in water, as has been demonstrated repeatedly; it multiplies in milk; it grows on all albuminous food products, and other foods offer it congenial soil. It then gains access to

the system through the ingestion of water, milk and various food products, passes through the stomach and begins its ravages in the small and large intestines. Its mode of entrance into the body, however, does not so much concern us in this inquiry as does its effects on the organism. When the germ enters the system it fixes itself in the intestinal wall, gradually finds access to the lymph channels, the lymphatic glands, first the mesenteric and then remote ones. In the ileum and upper cæcum a marked swelling of the solitary follicles and Peyer's patches takes place, while on the surface of the mucous membrane necrotic scabs are formed which eventually slough and leave typhoid ulcers in their wake. The poison shows special proneness to attack the adenoid or glandular tissues of the intestines infiltrating and swelling the solitary and agminated glands, and to a less extent the spleen, liver and kidneys also.

When these various changes take place, which occurs early in the course of the disease, they produce certain febrile symptoms and clinical phenomena which we have come to look upon and designate as typhoid fever.

The Eberth bacillus grows both in the presence and in the absence of oxygen; that is it grows as both an aërophyte and as an anaërophyte, and it may be innocuous in the former condition, and highly infectious in the latter, when the vital resistance of the tissues is low, or when they are in the proper state of receptivity. It is especially active at certain seasons of the year (autumn) which will be alluded to further on.

"Goffke, in his observations on this bacillus, has given us some valuable information as to its situation and mode of growth." He says that it is one of the few bacilli which grows freely and abundantly in water, a fact by the way of the highest importance both in its bearings on etiology and prophylaxis. It is very resistant both of heat and cold: twenty degrees below zero fails to affect its vitality, and conversely, a heat of 133° F. is required to destroy it. It retains its vitality for a long time even in river or lake ice. Uffelmann found that it lived in the earth for one year. It may be taken in with dust. It is found in the soil through which water has percolated. It grows in milk and luxuriantly in all albuminous foods, and, according to Goffke, is more abundant in all these media in the fall of the year than at any other season. As the typhoid bacillus is found so frequently in drinking water, milk, foods of various kinds, in the superficial layers of the soil, even in the alimentary canal of healthy individuals, why, it may be asked, does it not infect the intestinal glands and cause typhoid fever in every case? For almost every one

must at one time or another take into one's system some of the germs of the disease, remembering how widely they are distributed in the soil, water and albuminous foods.

Recent investigations in bacteriology have helped us to answer these questions. The rational explanation is that, although the typhoid bacillus is one of the causative factors, and an essential one, other contributory causes must also be present relating to individual suseptibility, such as a marked depression of the system, a lowering of vitality of the tissues, predisposing causes relating to environment, a favorable nidus, or, in a word, tissue vulnerability. In this connection we might also ask why do we not suffer from suppurative disease when the germs producing it are so often in our blood and tissues? Why are we not attacked with phthisis pulmonalis when the tubercle bacillus causing it is so widely distributed especially among urban populations? Why do we not contract pneumonia when the Fränkel diplococcus is so constantly present in the buccal secretions of healthy individuals? The Eberth bacilli are, so to speak, aroused into activity and cause typhoid fever only when the vital resistance of the tissues is lowered, or their functional activity modified. It is the old struggle between Ormuzd and Ahriman within the sphere of nutritive activity.

Once in the system the germ generates a poison called a ptomaine or toxalbumen, the absorption of which and its effects on the nervous system constitutes the clinical picture called typhoid fever. This ptomaine is merely the transition product through which matter passes while being transformed, by the activity of bacterial life, from the organic to the inorganic state. This struggle between bacterial invasion and tissue resistance is constantly observed not only in the disease under consideration, but in others caused by microörganisms. No septic endocarditis, for example, can be experimentally produced, even when septic matter is injected into the heart cavity, unless the valves or endocardium are roughened or diseased. Diphtheria does not ordinarily occur unless the tissues are weakened, the mucous membrane thin and tender and a favorable (catarrhal) condition is present in the upper air passages which offers a favorable nidus for its distinctive bacillus. "The germs of typhoid fever, like all other pathogenic germs, must be regarded as in themselves harmless so long as the tissues with which they are in contact are healthy, else how can we explain the immunity from the disease that exists in healthy individuals who constantly either receive them through food or drink into the alimentary canal or have them normally or constantly resident in that situation?"

Just at this point the important question arises—Has the human organism no natural and inherent defences against bacterial invasion? Fortunately it has such defences, feeble or powerful according to the potency of the invading germ.

The "phagocyte theory" of defence has been demonstrated mainly by the labors of Metschnikoff, and, while a most fascinating and instructive doctrine, is at the same time such an obscure and complex one that to more than incidentally touch upon it this time would lead me far beyond the scope of this paper. Some of the defences may thus be enumerated: (a) The human blood is, according to Stern, more or less destructive of typhoid bacilli, but exerts no damaging influence on the staphylococci; (b) congenital immunity which means something specific, dependent on physiological properties, on the one hand of the generating factors of disease, and on the other of the animal body or its individual organs and tissues; (c) prophylactic substances in the animal tissue-juices which form soluble "defensive" albuminoids; (d) in infection, where the microorganisms do not at once overwhelm the organism, the bacteria are ultimately engulfed to a large extent by wandering cells, or devoured by the leucocytes of the blood; (e) "if the animal recovers, the bacteria which are not thrown out of the system are killed and disintegrated in the interior of the white corpuscles;" (f) "Buchner has shown that the stimuli which attract the leucocytes to the attacked spot, are the proteids of the bacterial bodies;" (g) by many it is thought that those bacteria which are not taken up by the animal cells are destroyed by extra-cellular chemical influences. These are a few of the admitted defenses against bacilliary invasion; to concern ourselves with numerous others, not yet proven, would lead us far out into the almost untrodden paths of speculation.

The question now presents itself, why does typhoid fever show so much seasonal variation, the great majority of cases occurring as they do in the fall of the year? Are not unsanitary conditions favoring the spread of the active principle of the disease present quite as much in the spring and summer as in the autumn? Why, if the disease be due to a pathogenic germ, is that germ not as potent to produce the disease in May and June as it is in September and October? Late researches in pathology and bacteriology have helped us to answer these questions. It has been found that the typhoid bacillus grows more luxuriantly and more virulently in the fall of the year than at any other season, and it is also just this season of the year that the human organism is least capable of resisting disease. Physicians of much experi-

ence need not be reminded that at this particular season there is an increase of diarrhœa, dysentery, bilious attacks and various varieties of gastro-intestinal catarrhs in the adult and children. Sudden fluctuations in temperature are observed. Warm and sunshiny days are followed by cool nights which suddenly check the action of the skin and cause internal congestions. A variation in temperature between morning and evening, often as much as 15° or 20° F. when no precautions are taken as to clothing, invite congestions of the gastro-intestinal mucous membrane and obstinate catarrhs result. It is at this season that our hospitals rapidly fill with patients with bronchial catarrhs, broncho-pneumonia, emphysema, asthma, etc. It is also a matter of everyday observation that typhoid fever in the fall of the year frequently follows in the wake of diarrhœa, dysentery, and so-called bilious attacks; and one is often in doubt whether a case beginning as an ordinary diarrhœa will not end as one of typhoid fever. An increased potency of the germ during autumn on the one hand, and an increased number of cases of diarrhœa and gastro intestinal catarrh on the other, enables us to understand why typhoid fever is more rife at this particular season. While the intestine is in this catarrhal condition and the vitality of the tissues depressed below the resisting point, the specific bacillus is received into the system through drinking-water, milk, foodstuffs, or through other media, and finds in the already diseased mucous membrane a congenial soil for its growth, and for the evolution of its peculiar toxines. Moreover, Dr. Bordas in some recent researches, has shown that the bacillus of typhoid fever should be classed among the aërobic microörganisms. The bacillus, according to this observer, remains inactive in dry air completely deprived of vapor, but it continues to live and even multiply in an atmosphere more or less charged with humidity. These experiments are important as explaining why there is a greater frequency of typhoid fever in September and October, months which are ordinarily accompanied by the greatest atmospheric humidity.

It is not surprising that the pathogenic germ, having reached the intestinal tract, should attack the weakest tissues encountered, viz: the glands. Adenoid tissue possesses the unenviable distinction of having less vitality, less resisting power, and less power of repair than any other tissue in the body. It is the tissue which bears the brunt of attack in tuberculosis, syphilis, scrofula and other diseases, and offers the weakest defense against invasion. The changes in the glands consist of hyperæmia and swelling due to hyperplasia or exudation of lymphatic

elements. Peyer's patches form raised masses of a pinkish-gray color, with reticulated, rugous or nearly smooth surfaces, according as the inflammatory infiltration is uniform in all the tissues of the patch, or is greater in the follicles, or in the intervening structures. The solitary glands present similar changes. This change is completed about the tenth and not later than the fourteenth day. A recent writer in the *Practitioner* well says the entire process affecting the gland, so far as the typhoid bacillus is concerned, from the time of invasion to death or disablement of the gland, is over in fourteen days—the normal duration of typhoid fever from a pathological point of view. After this period, however, a new set of enemies appear on the scene in the shape of the suppurative micrococci, who, forming colonies on the injured or necrotic tissues around the glands, begin to generate their peculiar toxines, producing the special symptoms and temperature with which we are all familiar after the first fortnight of the disease; so that we may regard enteric fever as the result of the growth in the intestines of two sets of microörganisms. The so-called typhoid bacilli produce the symptoms during the first fortnight, and the suppurative micrococci the characteristic symptoms of its further stages. According to this view typhoid fever begins as a specific fever caused by the Eberth bacillus fixing itself in a catarrhal intestine whose vitality is depressed, and it ends as a septicæmia from the absorption into the system of the suppurative germs, the staphylococcus pyogenes aureus and albus, and the streptococcus pyogenes.

This view of the pathology of typhoid fever may savor somewhat of novelty, is one not ordinarily held by the medical profession, but it is a view which is amply sustained by the concurrent testimony of numerous competent observers, and which strongly appeals to our common sense. It was inevitable that our ideas as to the pathology of the disease would have to be modified and recast when bacteriology began its really wonderful work of unfolding to us the mysterious sources of human infection.

We repeat that the decomposition going on in the material in the intestinal tract is a poison which may arise entirely independently of the original cause of the disease, when favorable conditions are present. The alvine discharges of typhoid patients are, it is well known, loaded with septic germs. We all must have observed while turning back the bedclothes to examine typhoid patients a peculiar, strong, carrion-like odor which advises us that the stools are in a highly putrid condition. This

condition is always associated with a high temperature. If now the colon be washed out the temperature invariably falls. This proves, at least to my mind, that the reabsorption of this suppurative material contained in the intestine, entirely independent of the original producing poison, causes the increased temperature, the vital depression, and points to the necessity of intestinal antisepsis, as far as this can be carried out. Furthermore, the peculiar clinical symptoms often observed in this disease after the fifteenth or twentieth days, the enlargement of the liver, extreme tenderness in that region, the sweating, the peculiar oscillations of temperature, etc., very closely resemble those present in a suppurating lung cavity, or other septic conditions, and furnish a picture whose features are those of septicæmia rather than of typhoid fever.

If we look upon typhoid fever as primarily a catarrhal inflammation of the intestines, and secondarily one of septic poisoning, what practical indications are afforded us with regard to treatment? The rational indications are, I believe, three in number: First, intestinal antisepsis; second, cool bathing; third, a properly regulated diet.

With regard to intestinal antisepsis it is claimed by those whose immense experience entitles them to speak with authority, that the treatment has upon the whole, yielded satisfactory results, and, my own experience, comparatively small, is in accord with this view.

Those who will give the method a fair trial will find, I believe, first, that there will be a diminution or entire suppression of intestinal meteorism; second, that the stools will be more or less disinfected, no longer giving the fœtid smell of typhoid; third, that the mouth and tongue will clear up; fourth, that the temperature will be depressed; fifth, that the diarrhœa will diminish; sixth, that the general state will improve and the disease will run a shorter course.

Some physicians have opposed this treatment on the theoretical ground that no known drug can produce intestinal antisepsis. Whether or not this be true I do nor know, but I believe it is possible to disinfect the stools to a certain extent, and even if it does not kill all bacteria, or reach those in the mesenteries, lymphatics, etc., it at least renders the bowel as aseptic as possible. Intestinal antiseptics may not kill all germs, and may yet do good by making the intestine a less desirable breeding-place for the typhoid bacilli and various suppurative germs. I therefore think there is a good basis for this treatment, consisting in the fact that the fatal results come not from

the temperature, but from the severity of the poison which produces the high temperature. "The ptomaines developed in the alimentary canal are probably a more important cause of the death rate in typhoid fever than mere elevation of the temperature, and it is for this reason that one rationally employs intestinal antisepsis."

In other words, the suppurating bowel present in the last weeks of typhoid fever should be treated in the same way and with the same object in view that we treat a suppurating puerperal uterus, a suppurating pleural cavity, or a suppurating knee-joint. The juices of the gastro-intestinal tract have two functions to perform, those of digestion and antisepsis. One-half of the bulk of the gastric mucous membrane is lost in typhoid fever, according to Fenwick, with a corresponding loss in the digestive and antiseptic power of its secretions. There is therefore a rational basis for the employment of antiseptics in this disease, supplying artificially that which is temporarily diminished by disease.

The agents employed may be beta-naphthol, napthaline, resorsin, sulpho-carbolate of zinc or other equally efficient drugs, and they should be coated with keratin to insure them against the action of the stomach chemistry. If beta-naphthol be the drug selected, one should examine the urine from time to time since it sometimes causes albuminuria, which, however, disappears when the drug is discontinued. The method I have followed for some time is as follows: When a patient enters the hospital or is first seen in private practice 10 grains of calomel are given to clear out the bowels. Then one of the antiseptic remedies named is selected and given at regular intervals day and night until the temperature becomes normal and remains so. If there is considerable pyrexia the colon is also washed out from time to time with cool water to which is added a little creolin or some similar antiseptic.

Valuable as is antisepsis in typhoid fever it has to yield in importance to the bath treatment. It is believed that the cold water treatment of the Germans has never been systematically carried out in the United States, and this is all the more remarkable when we reflect that American physicians are usually so practical and ready to utilize the most successful methods of other nations. From 25 to 40 per cent. is the death rate from typhoid fever in our American cities; and, according to Dr. Delafield, 26 per cent. is the mortality in the New York hospitals in recent years. Brandt's method of cold bath treatment has reduced the mortality to 2.7 per cent. in his last series of cases, and it has never exceeded 4.7 per cent.

These statistics are compiled with the proverbial German accuracy, have never been impeached, and are based upon thousands of cases. It seems to me that no one open to conviction by statistics can fail to be convinced as to the value of this treatment after reading Brandt's records, as quoted in the last edition of H. C. Wood's book on therapeutics. Juergensen, Vogl and numerous others adopting the method have secured equally good results. Brandt's method consists in immersing the patient in a tub of water at a temperature of 76° F. and gradually reducing it down to 65° F., the patient remaining under water from 10 to 15 minutes. This treatment has had to run the gamut of much adverse criticism. It was claimed that Brandt's material being young and vigorous soldiers in the German army, this would explain his remarkably low mortality. It is urged by others that patients in Germany come under treatment much ealier than they do in the cities of this country, many of the latter being of poor material, alcoholics, badly fed, poorly nourished and composed largely of the vicious classes of our large cities. It has also been difficult to persuade American physicians that the impaired circulation, the cyanotic condition of the lips and extremities, the bad pulse, the shivering of the patient, etc., which often attend the immersion of typhoid patients in cold water, is a valuable therapeutic measure. Other objections are that the measure is troublesome, requires a relay of day and night nurses, has to be done immediately under the eye of the physician, is attended with a certain moral shock, especially in the case of women, the bathing apparatus is not always at hand in private practice and sometimes cannot be procured, and, finally, the system of "tubbing" runs athwart a powerful popular prejudice against cold, whether it be air or water. These are some of the objections against the cold bath treatment, yet the fact remains that our mortality in this country under the so-called "rational" or "expectant" treatment is two or three times greater than it is in Germany under the cold bath treatment, and it seems to me that the time has arrived when we should make a serious and honest attempt to adopt a method followed by such brilliant results abroad, at least in the hospital service of our large cities. I have generally employed the cold pack, the coil or simple sponging, but do not ordinarily interfere unless the temperature reaches 103½° F., for I think there is no advantage in using it sooner, or as a routine treatment, for some patients never take kindly to cold water. The after effects of cold bathing are far more marked and permanent in depressing temperature than any witnessed by the use of anti-

pyretic drugs. The cold water produces benefit not only in reducing temperature, but in allaying nervous symptoms, reducing the toxicity of the urine, in lessening heat units, in improving the function and nutrition of the skin, and in promoting capillary circulation. The objection to all antipyretics of the coal-tar and carbolic acid series, including quinine, antifebrin, antipyrin, etc., is that they are muscular depressors, causing mischief to the heart, the vascular system and bronchial muscles.

Under the belief, once so widely prevalent, but since proven to be erroneous by Naunyn and others, that high temperatures cause parenchymatous degeneration of the internal viscera including the heart, physicians brought to bear their heaviest guns in attacking temperature; and Liebermeister, imbued with this idea, went so far as to declare that, in the absence of other means of reducing high fever in pneumonia, he would expose the naked body of the patient to the cold air. It is now known, however, that in typhoid fever high temperature is not necessarily dangerous, or a measure of the mischief going on in the intestines. Mere pyrexia as a lethal factor is of secondary importance, and lowering temperature is not a curative measure. Many physicians, however, still attack the temperature with antifebrin, antipyrin and other powerful and depressing drugs, weakening in their effects on the heart and bronchial muscles, drugs which have no inhibitory effects on the real source of danger in typhoid fever, viz: the poisonous toxines generated in the alimentary canal. I cannot help thinking that much harm is done by the indiscriminate use of these depressing drugs.

As to the third indication for treatment, the selection of a proper dietary, little need be said since it is generally agreed that milk is the best nourishment. If there is evidence that the stomach cannot digest undiluted milk, then lime water should be added to the extent of 33 to 50 per cent. by bulk. Lime water is an intestinal antiseptic of no mean value. Beef tea is not a food, but merely a cardiac stimulant, and is very liable to ferment and cause tympanites, and generally is not indicated. A correlation between the pulse, the temperature, number of respirations and the patient's general state will furnish the best guide for the use of alcoholic stimulants. I frequently allow some solid food, as finely divided chop or steak, and have not known it to cause a relapse in any instance. Relapses, when they do occur, are not due to the food, but to a reinfection of the system by the typhoid poison.

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have seen a number of other cases which have been drained and washed out for months; I think of a case now in the City Hospital in Minneapolis which was under my observation for about four months. He had been washed out for four to six months before, and still there was no prospect of the cavity closing. I have observed a few cases of my own, and a number of cases of other surgeons and physicians where resections of the ribs were made, and in my opinion, in many of these cases it was the only way that the cavity could be closed, that is, by extensively resecting the ribs. In fact, in some cases the drainage is of no utility without resection of the ribs. For instance, the space between the ribs is not great enough to introduce a large enough tube to thoroughly cleanse out the cavity. You know there is apt to be much thick, flocculent lymph in those cavities that will not discharge except through a considerable opening. I believe therefore it is of great advantage in many of the cases to resect the ribs. On the other hand I do not believe that the mere resection of the rib will cure a great many of these cases, that is, that it will ever fill up. Where there is an immense cavity and the pleura has been very much thickened, as it sometimes is, to one-half or three-quarters of an inch in thickness, such an old cavity, surrounded by such solid wall, I must say it has not been my good fortune to see many of them closed. I have certainly seen a number of these cases going on for a year or more, and remaining in about the same status, closing extremely slowly if at all, and with such extensive suppuration carried on that it seems as though it must finally destroy the patient, continuing as it does for months and years. I think it is the best practice, therefore, where the cavity is large and shows no tendency to close, after a reasonable length of time to resect the ribs. It has been my experience in the few cases in which I have taken part, and in those which I observed under the care of other physicians, that in making a resection of the ribs we have not resected enough. If the ribs are to be resected at all they must be resected extensively and in proportion to the size of the cavity. I have observed a number of my colleague Dr. HOEGH'S cases of Estlander's operation. After a reasonable length of time, if the cavity shows but little signs of closing, we find the only cure to be extensive resection. There is one point more that I mention simply with the hope of getting an expression from some of the other members upon it. It is as to the fluid with which these cases had been washed out. Dr. ANDREWS recommended the bichloride, and I confess I have

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The following is the discussion on the paper read by Dr. J. W. ANDREWS, entitled

PLEURISY WITH PURULENT EFFUSION.

Dr. DUNN: I have not particularly prepared myself to discuss this paper, but there being nobody else to talk I will indulge my usual propensity to say something. I was very much interested in the paper, but there are two or three points that I am rather inclined to take issue with. In the first place it seems to me that the author is rather optimistic as to the results. It seems to me that a mortality of ten per cent. is small. It is certainly less than I have been accustomed to see. In the next place, as to the question of draining and washing without resection of the ribs. I understand the author to oppose resection of the ribs. In the cases that I have meet with it has seemed to me that some cannot be properly treated without resection of the ribs, while some others can be. In children, and in some small pus cavities, they certainly can be successfully drained without resection of the ribs. This I have had occasion to observe in my own experience. I remember one case particularly of a child about eight years old with an empyema holding a large quantity of pus, I think about a pint and a half, in which I made an opening between the ribs, inserted a drainage tube and washed it out as the doctor has suggested, and the cure was very prompt, unusually so. I would not attempt to say just how long it was but I am quite sure it was not over three weeks. There were no bad symptoms, nothing but steady improvement until it was entirely closed and healed, and it has never given any trouble since. I

have seen a number of other cases which have been drained and washed out for months; I think of a case now in the City Hospital in Minneapolis which was under my observation for about four months. He had been washed out for four to six months before, and still there was no prospect of the cavity closing. I have observed a few cases of my own, and a number of cases of other surgeons and physicians where resections of the ribs were made, and in my opinion, in many of these cases it was the only way that the cavity could be closed, that is, by extensively resecting the ribs. In fact, in some cases the drainage is of no utility without resection of the ribs. For instance, the space between the ribs is not great enough to introduce a large enough tube to thoroughly cleanse out the cavity. You know there is apt to be much thick, flocculent lymph in those cavities that will not discharge except through a considerable opening. I believe therefore it is of great advantage in many of the cases to resect the ribs. On the other hand I do not believe that the mere resection of the rib will cure a great many of these cases, that is, that it will ever fill up. Where there is an immense cavity and the pleura has been very much thickened, as it sometimes is, to one-half or three-quarters of an inch in thickness, such an old cavity, surrounded by such solid wall, I must say it has not been my good fortune to see many of them closed. I have certainly seen a number of these cases going on for a year or more, and remaining in about the same status, closing extremely slowly if at all, and with such extensive suppuration carried on that it seems as though it must finally destroy the patient, continuing as it does for months and years. I think it is the best practice, therefore, where the cavity is large and shows no tendency to close, after a reasonable length of time to resect the ribs. It has been my experience in the few cases in which I have taken part, and in those which I observed under the care of other physicians, that in making a resection of the ribs we have not resected enough. If the ribs are to be resected at all they must be resected extensively and in proportion to the size of the cavity. I have observed a number of my colleague Dr. HOEGH'S cases of Estlander's operation. After a reasonable length of time, if the cavity shows but little signs of closing, we find the only cure to be extensive resection. There is one point more that I mention simply with the hope of getting an expression from some of the other members upon it. It is as to the fluid with which these cases had been washed out. Dr. ANDREWS recommended the bichloride, and I confess I have

felt rather timid about washing an empyema cavity for any length of time with a solution of corrosive sublimate. It seems to me, especially if only a small opening is made, that there is danger of retention of a good ounce of the fluid within the cavity, and although the absorption is very different under different circumstances, still I believe it is certainly possible for such an amount of corrosive sublimate to be absorbed as to hold the patient down and depress him very much, if not even poison him. It has been my practice to use only very mild solutions, generally not more than one in 10,000 and not to use this many days at a time without changing to some other solution, either pure water or a half per cent. or one per cent. of creolin, which I think is a very excellent wash. We have, in our cases, derived some benefit in stimulating the cavity to close by washing it occasionally with a solution of iodine and water.

Dr. MAYO: I have had a few cases of purulent effusion. Of course the main point in the diagnosis of effusion is obtained with the needle. Now, it occurred to me that if you will insert the needle slanting up in the line of the rib slant it will not strike the rib and glance off. This point has been very useful to me. In trying to insert the needle for diagnosis in pleurisy or purulent effusion, push it directly into the side slanting it back and up in the rib line. If you do this, in a great many more instances the needle will slip in without striking the ribs, going in very readily. It can then be turned in any direction desired. Now, with regard to the ten per cent. of fatal results occurring, if one man could get all the cases, seeing them early, it would be possible to form some reasonable estimate of the mortality of these cases; but a good many come to us after months of retention of the fluid. None of these cases of old standing purulent effusion can be cured without first removing a section of the rib. If you should get a case which had existed but a short time, and the lung structure had not been destroyed, it might be possible to remove the purulent effusion, and within a short period of time get an expansion of the lungs that will fill this space. If the lung has been bound down and destroyed, or necrosis has taken place, as I have seen in a case which had evidently existed for months, it is impossible to close that cavity unless you remove a part of the ribs. It is necessary to remove three or four to get enough space so that you can insert a large sized drainage tube that you can slip a catheter in through and irrigate the cavity, and allow the necessary sinking of chest. Another thing: A

great many of these cases, I believe, are tubercular in character. In those cases an iodine solution has more effect than any other. You must not forget to keep good moist dressings on the outside. I have found that the German moss works very well and is more absorbent than sponge.

Dr. HALE: We older practitioners, way back in '57, had several cases of purulent effusion, and I will tell you what we used to do at that early date. The pleurisy resulted from exposure, and an abscess or effusion followed. These cases occurred mostly among the strong, vigorous young pioneers of this country at that time. Our treatment was very simple. I remember having as many as three cases in one neighborhood in one season, all of which got well with the simple treatment I followed. I took a common seton needle loaded with cotton cloth and plunged it into the abscess and let the matter run out, observing the ordinary means of cleanliness. Our patients got well, and perhaps it was owing to their vitality more than to our treatment, because we were ill prepared to do anything very scientific. The ordinary pioneer physician had but a few instruments, and he had to do all he could with those few. We failed to do the washing and attempt the irrigation and all that because our patients did well by letting the matter out, and changing this cotton cloth from time to time, keeping the wool clean. I merely mention this as the early treatment.

Dr. ANDREWS: I will say for the information of the Society that I refer to cases in my paper coming under the physician's care at a reasonably early period. I did not refer to those cases which have been improperly treated by making a small opening between the ribs, with perhaps no antiseptic dressings or cleansing, that have existed in that condition and discharged matter in that condition for month after month and possibly year after year. I referred to those cases that come under our care at a more recent period, and as I remarked in my paper there is no excuse for any physician who is entitled to the name of physician or to belong to the State Medical Society of Minnesota, not to readily diagnose pleurisy with purulent effusion, and once having made the diagnosis this treatment is reasonably clear. In my reference to resection and exsection of the ribs, I did not wish for a moment to condemn the operation. It is necessary in many cases, and it is very valuable. Sometimes it is the only way in which we can cure our patients, but I believe that in very many cases of pleurisy with purulent effusion we give it little or no treatment by pleurotomy and cleansing out the pleural cavity, but almost at once resort to the surgical

operation of resecting. I do not believe it is justifiable, as it is certainly an operation attended with rather more danger than pleurotomy. Resection is a more formidable operation, and as I said in closing my paper, it is objectionable if it can be avoided, in that there is so much greater deformity. No doubt all of you who have exsected the ribs for the first time have been surprised to see how much the chest will fall in. I believe that pleurisy with purulent effusion can be cured by a good free opening made between the ribs, a good large drainage tube introduced well down and a thorough washing out of the cavity. I will say that in washing it out I have used a long catheter and let the stream of water sweep around through the pleural cavity, thus avoiding leaving a residue of the water or solution in the cavity. If we cure our cases and make the pleura covering the lungs come out and meet the costal pleura, we will have a better result than if we compel the costal pleura to go in and meet the pleura covering the lungs, if I may so express it. I would therefore argue against hasty excision. In referring to the percentage of recovery, I am assuming that the cases are of reasonably early diagnosis and not such cases as Dr. DUNN has been speaking of. If they have been seasonably diagnosed and the insertion of the tube and washing out of the cavity is thoroughly done, a patient at once or very soon gets an appetite, begins to improve in health, looks better and the fever goes down. I believe we can pretty nearly come up to ninety per cent. of recoveries in those cases. I recognize the fact that Dr. DUNN speaks of, that there is some danger in using the bichloride solution of the strength that I have spoken of. Of course, I would not place this in the hands of a nurse. I would want to do the work myself. I would want to wash the patient myself or else have a competent physician do it. As I remarked in my paper I have had a few cases of ptyalism and a few cases of diarrhœa and have had to continue the wash, but I think those things can be watched for and avoided. I would be glad if any gentleman present would tell me of any remedy that will destroy pus formation and that will cause a purulent cavity to heal up better than the bichloride solution.

The following is the discussion on the paper read by Dr. J. W. THOMPSON, entitled

MASSAGE IN CERTAIN DISEASES OF THE EYE.

Dr. STEWART: I understood Dr. THOMPSON to say that he had found massage a valuable remedy in pannus. I would like to ask the doctor what he regards pannus as due to. My

understanding of it is that it is a sort of rough granulation upon the sensitive cornea, removing the epithelial layer and starting up an inflammation that results in enlargement of the blood vessels. Although I have listened to the paper with a great deal of interest, I cannot reconcile myself in the belief that massage upon a condition of pannus would do otherwise than great harm. It seems to me that it would aggravate it, and I would like to ask the doctor in what way he accounts for the improvement of pannus by massage.

Dr. THOMPSON: In cases of pannus where the œdema is simply a roughened condition of the conjunctiva, it is in a more passive than active state. The vessels in the cornea are surcharged, and we all know that the cornea does not circulate blood at all. Now the massage squeezes the blood out of the vessels and they contract. In that way I believe the massage to be useful. I have received very good results from it in cases of pannus.

Dr. COOLEY: I would like to ask the doctor the strength of that solution he referred to in his paper.

Dr. THOMPSON: I used one grain to a drachm, sometimes half a grain. When I use calomel in the eye I prefer the English preparation to the American. It is freer from the crystal of bichloride. Sometimes the American preparation irritates the eye when it comes in contact with it, but I have never had this trouble with the English.

The following is the discussion on the paper read by Dr. TALBOT JONES, entitled

THE MODERN VIEW OF TYPHOID FEVER AND ITS TREATMENT.

Dr. C. HILL: This paper certainly has a great deal of merit to it, and I think it ought not to be passed by without discussion. I hope especially to hear it discussed by the more modern element of this Society, inasmuch as it is a modern view of typhoid fever. Now we older men are not so far advanced in bacteriology as many of the younger ones. They have had more ample opportunities of late than we did in our time. They travel more into distant lands and to the best hospitals in our own country, and make an especial study of these matters, whereas we older men stay at home. We are the real horses, and do the best we can while the boys are accumulating knowledge. I would like to hear that class of gentlemen rise in this convention and notice the doctor's able article. Everything he said was of interest and of much interest. Of course I kept thinking while he was reading his article that his views

were somewhat different from my more antiquated views. Now, on the subject of contagion. I had always supposed that typhoid fever was more of a contagious disease than infectious, and where I drew my line of demarcation is here—I will illustrate. If you. go into a room where there are patients with the measles or scarlet fever you are very apt to contract the disease, that is, children are, because it is considered an infectious disease. But in other diseases, like scabies, ten thousand children might pass within two feet of the child who has the itch or scabies and never contract it; because it is not an infectious disease. But if you handle that child and catch that disease, according to the etymology of the term, you catch it by contagion, by touching it. Now, I have supposed that typhoid fever was more of a contagious than an infectious disease, and I stand enlightened after hearing the doctor say that it is an infectious disease. I repeat again the article is worthy of discussion.

Dr. FLINN: I agree entirely with Dr. JONES. Where I live we have typhoid fever almost all the time, and have had for seven years. We treat the disease by cool sponging with alcohol and water, half and half. The other physicians and myself treat the disease alike and we get good results, even better than is claimed by the advocates of the German cold bath. Our death rate has reached as high as two per cent. We have had cases extending over two or three counties and over a series of years. We often have severe cases where the temperature rises to 106°, and we consider that looking after details is the best treatment, having properly trained nurses, feeding the patient properly, seeing that they are properly cared for in well ventilated rooms, and treating them with cool sponging according to the temperature. In an average case where the temperature runs up to 103° or 104°, sponge every two or three hours during the twenty-four, and in cases where the temperature runs very high, sponge every twenty minutes. If the delirium is violent, keeping the pores open will help it. See that the patient is properly fed from the first. Begin with milk, giving perhaps a little chicken broth, but your patient generally tires of chicken broth. Milk, however, is the proper food. Give about one-half to two-thirds of a glass every three hours and more if the patient wants it. That is, not more in quantity but more often. Where the patient is fed properly from the beginning there is seldom a relapse. In violent delirium I find opium with chloride of potassium or that class of remedies are useful. The results of this form of treatment, frequent spong-

ing of cool water and alcohol, half and half, and proper care, is that our death rate is very small.

Dr. MAYO: Do you give antipyretics?

Dr. FLINN: We give no antipyretics at all. We have discarded them. We do not have to give alcoholic stimulants any oftener than one in ten. The death rate is greater among a certain class of people, among foreigners, where they are so frightened about catching the disease themselves that they put the patient off in some little corner where you cannot get around the bed, and leave the patient there alone and uncared for, simply taking in food once or twice a day. That class of patients do not get along. It is where they have proper care, where the patient's strength is preserved in every way that they recover.

Dr. FOSTER: I have just one word to say in regard to the diet. I agree with Dr. JONES that milk is the most suitable diet for the majority of the cases and often throughout the entire course of the disease; but so far as I have seen, a great deal of comfort may be given to the patient by a variety of other foods which are as easily digested as milk and often much more gratifying. Dr. JONES says that beef tea is nothing but a cardiac stimulant. That is very true of beef tea as it is ordinarily prepared, and also of beef tea made of the extracts. But it can be made so that it is really valuable and will contain a great deal of nourishment. I was glad to hear Dr. JONES say in his paper, that he had used chops and steak and various kinds of meat, finely divided, and that he had not seen any bad results from them. Another thing that is very grateful to patients is ice cream prepared at home, and made with the addition of a little egg. It is cold and very grateful to the patient and contains a great deal of nourishment, beside doing no harm. Raw eggs can also be used very freely. They can be used alone or in combination with a little milk. It is very important to arrange a diet which shall not be tedious and annoying to the patient, as milk alone so often is. I think by combining different kinds of food you can accomplish a great deal more.

Dr. SANDERSON: I agree with Dr. JONES in regard to the bacterial theory, and with Dr. FLINN in regard to not giving any antipyretics. I think that very often in cases in which there is insomnia, that by putting the patient upon an ordinary cot, with a hot bottle at his feet, covering his arms well and putting an ordinary sheet over him, sprinkling him with cold water every half hour or hour, the nervous symptoms will disappear

almost entirely and the patient will sleep. I do not think it is necessary to give anything internally, nor for the rise in temperature. I had forty cases one summer, and in all those cases when the temperature went over 104° I put them on this treatment and had very good results.

Dr. FLIESBURG: I think the doctor omitted to speak about one very important intestinal antiseptic, and that is salol. It has an advantage that the others the doctor spoke of do not possess. It is not acted upon by the stomach juices, but is absorbed in the intestinal tract. I regard turpentine as one of the better antiseptics, and also as a stimulant that I have always had a place for, especially if I have not been successful in clearing out the intestinal tract in the beginning. If tympanites is coming on, turpentine would be one of the best remedies to use. I have also had some experience with the cold bath. I have modified my plan as follows: As soon as the temperature rises to 102° or 103°, I apply an ice cold pack over the abdomen, changing it as soon as it gets warm. I keep that up until the temperature has run down to 99° or 100°, which it generally does in from an hour to an hour and a half. If the temperature rises again I renew the cold application. In this manner I have been able to get rid of all the nervous symptoms; in fact, I have very seldom seen any nervous symptoms during the last two years. They seemed to be entirely controlled by this cold application. I have used opium to a certain extent and can speak favorably of it, but if you follow such treatment as I have described, using the cold applications where the temperature rises to 103° or 104°, there is no need to use any internal antipyretics. In fact I think that all the antipyretics we are using, all the coal tar products, are dangerous, very dangerous indeed. I can relate one experience that came into my own life. I was called out in the country by a physician to see a young girl about nine years old, that had been using phenacetine for four weeks steadily, giving about ten grains every three to six hours, according to the rise in temperature. The result was that the child had hemorrhagic blotches all over the body, the heart was so weakened that it could not stand any strain whatever, and she died from heart failure. I claim it was due entirely to the immoderate use of phenacetine, which produced changes in the blood. Dr. FLINN spoke about alcohol as a stimulant. I think that the use of it is of no benefit as a continual heart stimulant. It is entirely depressing if so used.

Dr. FLINN: You misunderstood me, doctor. I spoke of

the alcohol used in connection with the sponging with cold water.

Dr. SANDERSON: I do not think that it can be considered a stimulant under any circumstances. Of course it will produce a certain amount of stimulating effect to begin with, but if you keep on with the use of it it will cause depression. It is not equal to caffeine or strychnine, from both of which I have experienced good results.

Dr. GROVES: The subject is one that I am intensely interested in, and I enjoyed the paper very much from beginning to end. I think that each one of us can gain some benefit from it. I have been very glad indeed to hear the remarks in regard to the nourishment of the patient. I had the misfortune to suffer from typhoid fever some nine or ten weeks nearly five years ago, and I think I know very well the sensations of the patient. I think we are too cruel sometimes, as a brother practitioner said to me a couple of years ago, when he was so unfortunate as to fall into my hands after having broken a leg. Said he: "Oh doctor, I am afraid I have been terribly cruel at times to my patients. I didn't intend to be so. I hope you will be careful and not be cruel to me."—I was setting his limb. I think that every physician who goes through an attack of typhoid fever will perhaps feel that at some time, when he didn't intend to, he had been cruel in treating typhoid fever. If you have ever been so unfortunate as to go through that experience and feel that terrible depression, that sense of weakness that nothing seems to reach, that feeling—perhaps you were perfectly clear-brained and could read your own case as well as the man that was attending you—that feeling that you were steadily going down hill and that nothing was preventing it, if you have ever felt that, you will know what proper nourishment means to typhoid fever patients. In my own case, after having been given up by men who were friends of mine, and who were doing their level best, after having it said when I. began to recover, "Oh well, he will never have his head again"—perhaps I have not, that remains for you to say—after knowing where the turning point was, feeling in my own mind that it was the nourishment I got—nourishment perhaps that I got in spite of the advice of those who were attending me—that experience taught me this, that in many of these cases there is a time, if we can only see it, when solid food will do more good than anything else; when instead of being the thing that will bring on a relapse it is the very thing that will tend to a speedy recovery. To return to my own case. I had a weak acting

heart, a pulse running about 120 and still dropping one beat on the average out of every three, barely perceptible, a temperature of about 103° all the time. I was given digitalis and brandy and all these different stimulants and liquid foods, and was calling all the time for something that my stomach could grasp. To describe my own feelings, it was as though my stomach wanted to get hold of something that it could squeeze right up and feel there was something there. It was a sensation as though every bit of the liquid food was squeezed out of it. I did not seem to receive any benefit from it, while a little solid food that was given me quieted this feeling and put me to sleep. I awoke feeling better, and insisted on a repetition of the dose. The next day the improvement was so marked that all could see it. Now, as Dr. FOSTER has said, beef tea can be made so it will be nourishing. I refer to beef tea which is made at home, not by simply soaking your beef in acidulated water and taking that, but doing that and then taking the beef again and cooking it; then taking that and setting it aside; then by drying the beef and grinding it to a powder and mixing them all together, warming that up and seasoning it, you will have a beef tea that when it goes into your patient's stomach will make it feel as though there was something there. In regard to the chops and steak that the doctor has spoken of, I believe they are one of the best forms of nourishment at certain times in the disease. Now, in regard to the use of antipyretics, I am sorry to say I have seen cases similar to the little child that died from the use of antipyretics, where I am as well convinced as any man can be that the death was due simply to over-medication. I have seen cases where they were giving six or seven grains of antifebrine every three hours, and an ounce or two ounces of whiskey every hour—in other words, knocking the patient down with one fist and helping him up with the other hand. I believe that by following out the line of treatment that the doctor has laid out in his paper we can bring through fully ninety-five per cent. of our patients. Following out that plan, using the sponging that Dr. FLINN has spoken of, in place of the cold bath, I have seen a mortality of only two or three per cent. in private practice; that is, not in my own cases alone, but in those of brother practitioners where the same plan, practically, was followed. I think the mortality has never been over three per cent.

Dr. DUNN: There was one point in the paper, a very valuable one, that has not yet been called out. As it is in accord with some observations I made some years ago, I would like to

refer to it. It is the dual or secondary infection in typhoid fever. I noticed, some years ago, that a great many men in our city were talking about a great many different kinds of fevers under observation. At that time I was in the office of the City Physician, and in two years I had two hundred and forty cases of typhoid fever. I noticed that a number of the cases of supposed typhoid fever varied greatly, and I at once made up my mind to make some investigation, because I was not so successful as to reduce the mortality to two or three per cent. A good deal of my time was employed in making post morten examinations and I made a great many of them. I think I learned from those observations that all those fevers that went by those different names were all typhoid, and that typhoid fever is quite irregular in its course. I think that many men make this mistake, they make up their minds that typhoid fever must follow the course laid out for it in books. These great variations are undoubtedly due, as I often found in those post mortem examinations, to the complications which are due to secondary septicæmia. I observed that there were very few cases of typhoid fever in which the temperature rose in the first week to a very high degree. But there were others where, in three or four days after the patient was taken, the temperature ran up to 105° or 106°. I notice that Dr. JONES said that those secondary infections took place after two weeks, and I would like to ask whether these cases are not probably exceptions to the rule, and that we really have a complicated infection taking place much earlier in the disease. I have made it a point to observe and inquire, and I find every now and then, perhaps out of two or three hundred cases, from careful inquiries made upon all these points, that there are probably five or six cases out of the whole in which the onset is terribly sudden. In reference to antipyretics I feel very much as the gentleman who spoke before me does. I do not think that it does typhoid fever any good to give antipyretics, as far as curing it is concerned, but I have noticed that there are some cases in which a small dose seemed to give a direct relief. I have noticed others in which only overwhelming doses will relieve the fever at all, and then only for a short time. I do not know what the rule is, but I see it very often in other forms of infectious disease. There are those in which ten grains of antipyrine will give a great deal of comfort and in others it will not help at all. I believe, however, with many other physicians in their administration, because I have seen it give relief in diseases of various kinds, in different fevers,

and in the fever of suppuration. I have never seen the very bad results that have been referred to by some of the other speakers. With reference to the spots broken out upon the patients, I am sure I have seen that very same thing before we had any such remedies, and it does not prove anything, not even in the slightest degree. It is simply a matter of theory. As to the use of alcohol, whether it is a stimulant or not, there is no question in my mind that it is one of the best internal antiseptics that can be given, and it will reduce the temperature to a considerable extent. I think I have seen as much effect in reducing the temperature with alcohol as I have with quinine. I am quite sure it is very much more valuable in treating any trouble of this kind than is quinine.

Dr. ANDREWS: I would like to ask the doctor if in those cases where the onset of the fever was sudden he held any post mortem examinations, and if they were cases of typhoid fever without any question.

Dr. DUNN: Yes, they were.

Dr. COOLEY: I want to say just a word in regard to keeping the patient quiet. Do not let him sit up part of the time, and then lie down. I think the quieter we keep our typhoid patients the better they get along and the less they require to lessen the nervous excitement.

Dr. GREEN: I would like to offer one word of protest against the use of beef tea. It is a well known fact that a rise in temperature often follows a change from the ordinary milk diet to a beef tea diet. It has been my misfortune to see a number of typhoids, in hospital practice, where this change was made, and in nine cases out of ten there was an immediate rise in temperature, which would seem to justify the belief that a reinfection had occurred by means of a new crop of the germs in the intestines.

Dr. FLINN: I have never had a case go through on beef tea, but I have had four or five go through on chicken broth. They did not seem to lose flesh or become more emaciated than those who took milk. My rule is to feed them every three hours whether they like it or not. Give it to them as medicine. I think it is a mistake to allow a patient to go three or four days without food.

Dr. ANDREWS: Is it not a fact that middle aged and robust persons, for example, laboring men, are more subject to typhoid fever than either the young or the old or the delicate? If that is true, is it not inconsistent with the theory advanced by Dr. JONES?

Dr. JONES: I feel very much indebted to the gentlemen who have so kindly received my paper. It has not been seriously criticised, except on one point, I believe.

I think Dr. FLINN and I pretty well agree about the treatment of typhoid fever. The only thing that is new to me in his remarks is the use of opium for the purpose of allaying the delirium. I do not know that I have ever used opium for that specific purpose. I fully agree with Dr. FLINN that milk is the best diet, and that many typhoid fever patients rapidly emaciate when fed on chicken or mutton broth. I have noticed that repeatedly both in hospital and private practice, and I must add that taking all things into consideration, I feel that milk is decidedly the best form of nourishment in typhoid fever, notwithstanding what Dr. FOSTER and others have said about beef tea. Beef tea is not a nourishment but merely a heart stimulant, and the chief danger from the use of it is that it brings on meteorism, and that is a very dangerous complication in typhoid fever. I do not know whether or not it is a medium for reinfecting the system, but I do know that it gives rise to meteorism, which is always dangerous. Milk with a little lime water in it will not do this. I was in hopes that more would be said with reference to the pathology of typhoid fever, but the whole discussion seems to hinge on the treatment. Some of the ideas in the paper with reference to their being mixed or dual infection, are not the ones that are ordinarily held by the medical profession, and I naturally supposed that the most adverse criticism would come along the line of the pathology of the disease. I believe, however, that it has been alluded to only by Dr. DUNN. I would suggest, and I merely throw it out as a suggestion, that where there is a sudden rise in the temperature, or the peculiar oscillations in temperature that Dr. DUNN mentioned as occurring, there might be a question as to whether or not the septic germs do not override the so-called typhoid germs; whether the septic phenomena of the disease do not predominate and hold in abeyance the typhoid phenomena. I do not know how to explain it in any other way. It may be that this septic element causes the sudden and violent onset of typhoid fever at times I have noticed that several of the gentlemen who are practising in cities not so large as the Twin Cities, are getting a great deal lower rate of mortality than we are here. I think that if Dr. FLINN practised in the city a while, perhaps on the hospital staff, where the majority of his patients would gravitate between the workhouse and the hospital, he would find that we have very poor material to work

on. Many persons are driven to the hospital in the patrol wagon, being delirious when they arrive there, and we cannot get any history from them. He would find that we have a great deal poorer class to deal with here than in the smaller places. I suppose that is the reason why one gets so much lower rate of mortality in the country. Dr. Delafield, of New York, has stated that the mortality in the New York hospitals in the last nine years has been twenty-six per cent. This excessive rate is of course due to the bad material that enters them. I hope that some of you gentlemen will give this antiseptic treatment a fair trial in your practice. A drug that I have found of great utility is the sulpho-carbolate of zinc, giving four or five grains every three hours. I give it day and night. The sulpho-carbolate of zinc is somewhat astringent, and stops the fœtid smell of the typhoid fever stools, and combines many excellencies in one drug.

If what I said about chopped beef and finely shredded steak would lead to the impression that they ought to be used as a routine treatment in typhoid fever, I would be very much misunderstood. I think it is dangerous ordinarily for solid food to be given in typhoid fever. I think it would be liable to give rise to meteorism and intestinal hemorrhage. I have only allowed a small amount of shredded mutton, and ordinarily I would not rely on it. I think it would be a dangerous thing to give mutton or beef to be chewed by the patient. I would not give it anyway except in small quantities, and not over twice a day. I thank you all, gentlemen, for the reception you have given my paper.

THERAPEUTICS AND MATERIA MEDICA.

H. M. BRACKEN, M. D., Chairman.

A REVIEW OF THE PRESENT USE OF DRUGS.

Therapeutics is a subject that doctors seem to avoid. The idea conveyed by the subject is something after the style of a materia medica with an application of the action attachment.

Many practitioners of the present day scoff at drugs, and therefore at therapeutics, forgetting that the word therapeutics means to *cure*, to *heal*, and that other methods of curing than those dependent on drugs may properly come under this head. Surgery has done wonders for therapeutics in the last few years. The day of temporizing with drugs when the more radical methods with the knife can be resorted to has gone by. Nothing can illustrate what I wish to emphasize with reference to the vastness of therapeutic agents more than a recent encyclopædic work on therapeutics, in which drugs hold a very secondary place, but where surgergy, electricity, hygiene, gymnastics, climate and everything that can be utilized to bring about recovery has a place.

The old therapeutist, while considered a drug therapeutist, should have been classed rather as a mental therapeutist, for the benefit derived from the drug was largely due, first, to the amount of faith the physician had in the drug he was prescribing, and second, the amount of faith the patient had in the prescriber. How often, even in the present day, do we know of physicians lauding a drug as a cure-all; applying such to all diseases, recovery when occurring being attributed to the cure-all drug, while in reality nature has done the work and the physician has secured the pay. Note these same cure-alls after ten years or so. They have fallen into disuse and their enthusiastic prescribers have some new remedy to which they look with the same inane confidence. Pathology should always precede therapy, and it is doing so more and more. The old system of empiricism which brought therapeutics into such disrepute is rapidly giving place to rational therapeutics. Pathology is largely responsible for this.

Everyone who prescribes drugs should ask himself what he wants to accomplish and what will accomplish it.

It is a pity that the materia medica is still so overstocked with drugs and an unlimited number of useless preparations. Probably there is no physician here who could not limit all of his prescribing to a list of twenty-five preparations and get as good results as he may now be doing with the number exceeding this three or four times.

While the field of therapeutics is wide it is not necessary for me to refer to those coming under special lines. Suffice it to review drugs.

Our pharmacopœias have been loaded with preparations *ad nauseam* from the animal, vegetable and mineral kingdoms. A new line has been opened up with the carbon compounds, and the possibilities of growth in this direction seem to be without limit. With these last there is often a great sameness in action as illustrated by antipyrine, acetanilide and phenacetine. The general action of these compounds is antipyretic, analgesic or antiseptic, the most important being probably the analgesic properties. As antipyretics they are often uncalled for or even dangerous where they have been used so much of late.

It is almost, if not quite impossible to find any drug that has no disadvantages, but the new drug that has fewer weak points with all the strong points of the old one is worthy of careful study. It seems absurd, however, to chase after a change that brings benefit only to the pocket of the manufacturer.

The old drugs that have been tried and found wanting in value still exist in name, in text books, to worry the student. Those that have a recognized value hold their place in spite even of the therapeutic nihilist who maligns drugs but uses them still as necessity seems to require.

Of the old stand-bys, opium, mercury, the iodides and quinine, little need be said; no intelligent doctor can get along without them. There are preparations not new but not so well known as they should be, for example hyoscyn or hyoscyanin for its hypnotic and antispasmodic action, peroxide of hydrogen for its antiseptic properties.

Of newer drugs salol deserves notice. Useful when antiseptic action is wanted along the lines of elimination, as in cystitis, urethritis, tonsilitis, etc., and possibly typhoid fever, but of no great advantage in the treatment of acute articular rheumatism, where it has been too highly praised. Positively dangerous when given in too large doses due to carbolic acid and salicylic acid poisoning.

Ichthyol is one of the latest drugs deserving attention. Whether it will establish a firm reputation as a therapeutic agent re-

mains to be seen. Certainly it holds a prominent place at present.

Caffeine has not received sufficient attention. It is frequently thought of only as a cardiac tonic or stimulant when in reality it should have a prominent place in therapeutics as a diuretic and in the treatment of various forms of nervous headache. It is generally prescribed in too small doses. The citrate is the preparation most commonly used, but it has no advantage over caffeine itself and may possibly be less reliable.

It seems to me that the dangers from the use of pilocarpine have been dwelt upon to such a degree as to make physicians neglect its proper use. No doubt it should be avoided in asthenic types of disease, also in cardiac disease because of the depression that it may cause, but these points should not preclude its use.

Nitroglycerine is not used enough. In various forms of disturbed circulation the nitrates are of marked benefit through their action in causing dilatation of blood vessels.

It is hardly necessary to draw attention to the fact that drugs which increase peristalsis are preferable to those whose action is more marked by increasing secretion in the treatment of chronic constipation. Hence such combinations as aloes, strychnine and beladonna are prominent when such therapeutic effect is wanted, and the old custom of using active purgatives is, or should be, quite generally abandoned.

Among hypnotics the therapeutic gain has not been great. Sulfonal has been a disappointment, possibly due in part to the fact that it has not been used to the greatest advantage.

Chloralamide might well be used more than it is, for it is suitable for all those cases in which chloral might be prescribed and is much safer. Hypnol and somnal have no prominent place as yet. Paraldehyde is good but nasty.

The medical treatment of hemorrhages is called for only in those cases where surgery is helpless. The old system of using astringents or styptics is often not only unreasonable but absurd. They are of no value unless they come in contact with the bleeding part, either directly or indirectly. Remedies which slow the action of the heart as aconite, viratrum viride, or which cause contraction of the blood vessels as ice, heat, digitalis, ergot, or which cause dilatation of vessels as the nitrites. Turpentine should be preferred to those whose action is supposed to be due to their favoring coagulation.

NOTES ON THE ALKALOIDS OF HYOSCYAMUS.

W. A. JONES, M. D.

The principal alkaloids derived from hyoscyamus are two, one hyoscyamine sulphate in crystals, neutral, readily soluble in water and of light yellow color, and another an amorphous alkaloid called hyoscine, a thick, dark, syrup-like substance from which the hydrobromate and hydriodate of hyoscine are derived.

This substance, hyoscine, is known commercially as amorphous hyoscyamine, hence the confusion in terms.

It is a crude drug and is thought to be unreliable, but I prefer it to either of the alkaloids.

The chemical formula of hyoscine and hyoscyamine sulphate is the same, yet they differ in their physiological effects and doses.

When the word hyoscine is employed it refers to the dark, thick, amorphous alkaloid, and the hydrobromata and hydriodate are derived from the crude drug.

When we speak of hyoscyamine we mean the alkaloidal sulphate and nothing else.

The doses of each differ widely, Hyoscine in its impure crude state (prepared by Merck) can be given in from 1/6 to 2/3 or even one grain doses.

This amorphous alkaloid is best prepared for the hypodermic syringe or for the stomach in the following formula:

℞	Hyoscine (amorphous).....	gr. 15;
	Alcohol.....	ʒ x;
	Glycerine.....	ʒ iv;
	Aq. Destil.....	ʒ ji.

M. Dissolve the alkaloid thoroughly in alcohol and add glycerine and water slowly until well mixed. Each 10 minim contains 1/6 of a grain and is an ordinary dose.

Given in this way I find it safer and the effects much more pronounced than from any of the other preparations. This dose can be easily reduced or increased.

The dose of hyoscine hydrobromate or hydriodate is from 1-200 to 1-25 of a grain. The hyoscyamine sulphate from 1-200 to 1-48 of a grain.

It is well to be cautious in the administration of the alkaloids in either form, as some individuals are very susceptible to a small dose and yet these are usually the patients in whom you wish to produce decided effects.

The alkaloids of hyoscyamus are depressants to the cerebral and spinal centres, stimulators of the vaso-motor system, and lessen the pulse-rate but do not materially effect the pneumogastric functions.

In small and insufficient doses the face is flushed, pulse increased for a time then diminished, throat and tongue dry and usually the pupils are dilated. Occasionally a delirium mild or furious develops, and in combination with the other symptoms may seem alarming and yet there is no real danger.

I have had patients who were not at all accustomed to the drug take a full grain. It produced a complete motor paralysis, very slow pulse, enormously dilated pupils, labored and almost Cheyne-Stokes respiration with puffing of the cheeks as if apoplectic and yet the effects passed off with no inconvenience inside of 12 hours.

No cases of poisoning are recorded from hyoscine. I believe physicians in general are timid about using these alkaloids and this timidity can only be overcome by studying the effect and using proper and if needed heroic doses. It should be used with caution if there is acute cerebral congestion or inflammation, or in organic diseases of the heart or kidneys.

Some months ago I saw a young woman who was suffering from hysterical convulsions during her menstruation. It was an old trouble and each month the convulsions recurred. She had aortic and mitral valvular lesions and the heart was extremely irregular. I gave her hypodermically ⅓ gr. of hyoscine with the happiest results, the convulsions ceased and the sleep that followed restored the regularity and force of the heart beat. She has had no convulsions since.

The alkaloids are useful in a large number of diseases. It is the best thing I know of in delirium tremens. Often one dose will quiet the delirium and produce several hours' sleep, after which the patient may waken clear and coherent. In others it is necessary to give repeated doses every six hours for a day or two. If hyoscine is used give ⅓ of a grain and if well borne and sleep follows this is the proper dose; if sleep does not follow and the delirium is intensified give ½ gr. and so on up until the wished-for result is attained. If the hydrobromate or hydriodate is employed give from 1-100 to 1-25 of a grain; hyoscyamine sulphate from 1-100 to 1-48 of a grain.

In hysteria, hystero-epilepsy or hysterical convulsions the effect is good, as the physiological phenomena which follow the use of hyoscine are of considerable importance from a moral standpoint, the disagreeable dryness of the throat, the motor

helplessness and the disordered vision will change the current of thought as effectually as an ice pack over the abdomen.

The furor which occasionally displaces the fit of an epileptic will usually succumb to a full dose of hyoscine, and thus you may often shorten the fury which otherwise might be dangerous or lead to an asylum commitment. In acute and chronic mania and melancholia agitata the excitement may be controlled or tided over. The dose is so small and can easily be given hypodermically or by deception by the mouth, that you save time and do not disorder the stomach by other drugs.

In chorea the drug may be given to children in doses of from 1-400 to 1-200 of a grain frequently during the day until the movements become more quiet. I do not mean that hyoscine takes the place of arsenic or other remedial agents.

The tremor of paralysis agitans of mercurial poisoning and of insular sclerosis can be modified by continued doses of either alkaloid, but the dryness of the throat and dilated pupils limit its use to specific occasions.

In spermatorrhœa and incontinence it is of some value in small and continued doses.

In spasm of muscles or muscle groups it is often successful when other drugs fail.

In continued hiccough a full dose hypodermically is often the only remedy and should be tried if other drugs and domestic formulas fail.

I have never heard of hyoscine in tetanus and yet it seems to me indicated.

In a few forms of insomnia it is beneficial, but here it is limited to those cases in which the patient is restless, worried or anæmic. In the delirium of fevers, typhoid, scarlet and others, it is of questionable value, and if used at all should be given in great moderation as it may prove too depressing.

The resinous hyoscyamin, a dark green powder, is in my experience absolutely worthless, often inert and always unreliable, and posesses no advantages over the ordinary preparations of hyoscyamus.

CONSTITUTION AND BY-LAWS

—OF THE—

Minnesota State Medical Society,

[The amendments of 1892 are printed in *italics*.]

ARTICLE I.—NAME.

This Association shall be called "The Minnesota State Medical Society."

ARTICLE II.—PURPOSES.

Its objects shall be (1) the association of the medical profession upon a basis of good fellowship; (2) the maintenance of harmony and good government among its members; and (3) the cultivation of medical science and literature and the elevation of the standards of medical education.

ARTICLE III.—MEETINGS.

An annual meeting shall be held, alternately in the cities of St. Paul and Minneapolis, beginning upon the third Wednesday in June of each year, and extending over three days. The place of meeting may be changed by a two-thirds vote of the members present at any regular meeting. Special meetings may be called by the President, upon the petition of ten members, and a twenty days' notice thereof shall be published in the daily papers of St. Paul and Minneapolis.

Fifteen members will constitute a quorum at any meeting.

ARTICLE IV.—MEMBERSHIP.

The active members of the Society shall be regular physicians, shall hold the certificate of the State Board of Medical Examiners, or its legal equivalent, shall be of good professional attainment and moral character, and shall have been in active practice in the State for not less than six months prior to nomination. The honorary members of the Society may be residents or non-residents of the State. The names of candidates

for active or honorary membership must be presented in writing to a Committee on Membership, which shall pass upon their qualifications for admission, and report them to the Society for election. They shall be elected by written ballot and by a majority vote.

All candidates for active or honorary membership residing in any county in the state where a county medical society exists, shall present as one of their qualifications for admission a certificate from the secretary of the said county society that they are members in good standing.

ARTICLE V.—Officers.

The officers of the Society shall be a President, three Vice-Presidents, a Secretary, a Treasurer and a Board of Censors consisting of six members. These officers shall be elected by ballot annually, the Censors to be chosen from the list of Ex-Presidents of the Society, two each year to serve for a period of three years except in 1892, when six shall be elected, to serve, two for three years, two for two years and two for one year. A majority of the vote cast shall elect.

ARTICLE VI.—Committees.

The President shall annually appoint a Committee on Nomination, consisting of one member from each congressional district in the State, an Executive Committee, a Committee on New Members, a Committee on Finance, a Committee on Necrology, each consisting of five members, and a Committee of Censors of Papers, consisting of three members.

ARTICLE VII.—Sessions.

The Society at each annual meeting shall hold a session of three days, and the duties of each day shall be divided into three periods, extending respectively, from 10 to 12 A. M., from 2 to 5 P. M., and from 8 to 10 P. M., excepting upon the third day of the session, when the third period may be omitted.

ARTICLE VIII.—Professional Work.

The professional work of the Society shall be divided into eight departments, viz.: (1) Practice of Medicine, (2) Surgery, (3) Obstetrics and Diseases of Children, (4) Gynæcology, (5) Therapeutics and Materia Medica, (6) Nervous Diseases, (7) Pathology and Physiology, (8) Medical Education, Jurisprudence and State Medicine.

Note.—Orthopædia, Otology and Ophthalmology shall be included with Surgery. The Society shall give to each department in turn its general attention. A chairman of each department shall be nominated for the ensuing year by the Committee on Nominations, and shall be confirmed by vote of the Society.

ARTICLE IX.—Ethics.

The Code of Ethics of the American Medical Association shall be the rule of this Society in matters of professional etiquette. Charges of unprofessional conduct may be preferred in writing against any member and shall be referred to the Board of Censors, which shall cite the accused and his accusers to appear before it, shall hear the evidence in the case and report a decision thereon to the Society. This report shall lie upon the table until the next annual meeting thereafter, when the Society, by a vote of four-fifths of the members present may adopt the same and censure or expel the offender.

ARTICLE X.—Auxiliaries.

The county or district societies of the State shall be regarded as auxiliary to the State Medical Society.

ARTICLE XI.—Amendments.

This Constitution may be amended by a unanimous vote of the members present at any regular meeting, or, by a two-thirds vote of the members present after one year's previous motion or notice to amend has been given.

BY-LAWS.

No. 1. The President shall preside at all business meetings, shall have the privilege of a casting vote, shall appoint all committees not otherwise provided for, and fill all vacancies in the same, shall keep general oversight of the duties of these committees, shall sign all official documents requiring his signature, and perform such other duties as appertain to his office by custom.

No. 2. The Vice-Presidents shall assist the President in the performance of his duties, and in his absence shall preside in their order of rank.

No. 3. The Secretary shall keep the minutes of all meetings, shall notify officers of their election and Committees and Chairmen of Departments of their appointment, shall certify to

all official acts and transact all clerical business in behalf of the Society. He shall be entitled to draw an annual salary of $100.

No. 4. The Treasurer shall receive all dues and shall deposit the same in a bank or safe depository; he shall pay all bills after they have been audited and approved by the Finance Committee and countersigned by the President; shall keep an account with the Society and make a detailed report at each meeting; he shall notify members of delinquency in the payment of fees one month prior to each meeting.

He shall be entitled to draw an annual salary of one hundred dollars and shall be required to furnish sureties in the sum of three thousand dollars, said sureties to be approved by the President and Secretary of the Society.

No. 5. Standing committees shall keep regular minutes of their proceedings and shall furnish copies of the same to the Secretary.

No. 6. The Executive Committee shall arrange the conduct and prepare the programs of each meeting and mail a copy of such programs to each member of the Society ten (10) days before the annual meeting. It shall recommend plans for the promotion of the objects and interests of the Society.

No. 7. The Committee on Nominations shall meet immediately after its appointment, specified in Article VIII of the Constitution, to serve for the ensuing year and shall report the names of said chairmen to the Society at its next business session.

No. 8. The Committee on New Members shall meet as often as may be necessary during the regular meeting of the Society, and shall receive written nominations for membership. It shall canvass the eligibility of each candidate in respect to his legal qualifications, moral character and professional standing, and shall report its decision thereon to the Society.

No. 9. The Committee on Finance shall inspect and audit the accounts of the Treasurer, and shall recommend such annual assessments over and above the annual fee, which shall be two dollars, upon the members, as shall be necessary to meet incidental expenses.

No. 10. The Committee of Censors of Papers shall meet on the first of June. All papers offered to the Society shall be submitted to this committee which shall select such as have sufficient scientific and literary merit to warrant their presentation and shall assign these papers to their proper sections. The papers so select-

ed shall be read and published. The committee shall at once furnish to the Executive Committee a list of the papers accepted. Each member of the committee shall be paid twenty-five dollars annually. The transactions and papers of the Society shall be published in the "Northwestern Lancet," which shall be regarded as the official organ of the Society, upon the terms of an offer submitted by the "Lancet" June 19, 1890, and the bound volume of the Transactions thus provided shall be sent by the Secretary to each member.

No. 11. The Committee on Necrology shall prepare a memorial of any member or members who may have died during the preceding year and shall present the same to the Society at the annual meeting.

No. 12. The Chairman of each section shall lay out the plan of its work and shall preside at its meetings.

No. 13. Any reports of Standing Committees or papers may be read by title upon vote of a majority of the members present, and shall be referred to the Committee on Publication. A synopsis of their contents may be given by the Chairman of the respective Committees or Departments if desired.

No. 14. All motions presented to the Society shall be in writing, and upon being seconded shall be forwarded to the Secretary's desk for record.

No. 15. Every new member before assuming his membership shall pay an initiation fee of Three Dollars and his annual Dues of Two Dollars and shall sign the Constitution and By-Laws. Any member who shall fail to pay his annual dues for a period of three years, after due notice from the Treasurer, shall be dropped from the rolls and shall be reinstated only by a two-thirds vote of the members present at any regular meeting and upon the full payment of his past dues.

No. 16. Robert's Rules of order shall be regarded as the parliamentary text book of the Society.

No. 17. The order of business of the annual meeting shall be as follows:

FIRST DAY'S MEETING.

10:00 A. M. to 12:00 M. Business Session.

(a) Call to order by the President.
(b) Report of Executive Committee.
(c) Roll call.
(d) Reading of the minutes of the last meeting.

(e) Unfinished business or business requiring early attention.
(f) President's address,
(g) Report of the Treasurer.

2:00 P. M. to 5:00 P. M.

(a) Section of Practice of Medicine.

8:00 P. M. to 10:00 P. M.

(a) Section of Therapeutics and Materia Medica.
(b) Section of Nervous Diseases.

SECOND DAY'S MEETING.

10:00 A. M. to 12 M. Business Session.

(a) Reports of Correspondents.
(b) Reports of Delegates.
(c) Reports of Special Committee.
(d) Unfinished and miscellaneous business.

2:00 P. M. to 5:00 P. M.

(a) Section of Surgery.

8:00 P. M. to 10: P. M.

(a) Section of Pathology and Physiology.
(b) Section of Medical Education, Jurisprudence and State Medicine.

THIRD DAY'S MEETING.

10.00 A. M. to 12 M. Business Session.

(a) Unfinished and miscellaneous business.
(b) Selection of place for next meeting.
(c) Election of officers and their installation.
(d) Election of committees.

2:00 P. M. to 5:00 P. M.

(a) Section of Obstetrics and Diseases of Children.
(b) Section of Gynæcology.

The Executive Committee shall have power to alter the regular order of business, provided that the changes be incorporated in the published program.

No. 18. The operation of these By-Laws may be suspended by a three-fourths vote and they may be repealed or amended by a unanimous vote at any regular meeting. If any objection is entered to such repeal or amendment, it shall be laid over for action at the next annual meeting, when it may be adopted by a two-thirds vote.

PRESIDENTS OF THE SOCIETY.

SAMUEL WILLEY,	1869–1871
FRANKLIN STAPLES,	1871–1872
W. W. MAYO,	1872–1873
W. W. SWEENEY,	1873–1874
N. B. HILL,	1874–1875
J. H. STEWART,	1875–1876
F. H. MILLIGAN,	1876–1877
OTIS AYER,	1877–1878
J. E. FINCH,	1878–1879
A. C. WEDGE,	1879–1880
A. J. STONE,	1880–1881
C. N. HEWITT,	1881–1882
P. H. MILLARD,	1882–1883
W. L. LINCOLN,	1883–1884
J. B. McGAUGHEY,	1884–1885
E. J. DAVIS,	1885–1886
H. H. KIMBALL,	1886–1887
C. F. McCOMB,	1887–1888
C. A. WHEATON,	1888–1889
J. H. DUNN,	1889–1890
W. L. BEEBE,	1890–1891
PARKS RITCHIE,	1891–1892
A. W. ABBOTT.	1892–1893

ROSTER.

A. W. Abbott, Minneapolis.
E. J. Abbott, St. Paul.
E. D. Abell, Farmington.
C. P. Adams, Hastings.
W. F. Adams, Elgin.
J. C. Adams, Lake City.
A. G. Aldrich, Anoka.
Flora E. Aldrich, Anoka.
Chas. T. Allen, Minneapolis.
Frank Allport, Minneapolis.
A. B. Ancker, St. Paul.
J. V. Anderson, Red Wing.
J. W. Andrews, Mankato.
R. S. Bacon, Montevideo.
A. L. Baker, Byron.
J. F. Baker, St. Paul.
Nathan M. Baker, Rochester.
C. K. Bartlett, St. Peter.
G. C. Barton, Buffalo.
G. Willis Bass, Minneapolis.
C. E. Bean, St. Paul.
R. O. Beard, Minneapolis.
J. Bedient, Kasson.
W. L. Beebe, St. Cloud.
J. W. Bell, Minneapolis.
Mowry Bell, Minneapolis.
W. W. Betts, Minneapolis.
E. E. Bigelow, Owatonna.
F. E. Bissell, Litchfield.
Helen W. Bissell, St. Paul.
F. A. Blackmer, Albert Lea.
C. H. Boardman, St. Paul.
Rob't S. Bole, St. Paul.
J. E. Bowers, Duluth.
H. M. Bracken, Minneapolis.
G. S. Brigham, St. Cloud.
D. F. Brooks, Minneiska.
E. J. Brown, Minneapolis.
L. R. Brown, St. Paul.
E. E. Brubaker, Northfield.
Frank Burton, Minneapolis.
M. E. Bushey, Arlington.
W. J. Byrnes, Minneapolis.
H. Cary, Minneapolis.
A. B. Cates, Minneapolis.
T. J. Catlin, Delano.
J. W. Chamberlin, St. Paul.
C. L. Chambers, Kasson.
O. S. Chapman, Minneapolis.
C. A. Chase, Minneapolis.
E. Y. Chilton, Howard Lake.
G. R. Christie, Long Prairie.
J. C. Cockburn, Minneapolis.
H. B. Cogswell, St. Panl.
J. M. Cole, Winona.
J. B. Cole, Wabasha.
E. E. Collins, Duluth.
A. T. Conley, Cannon Falls.
H. E. Conley, Cannon Falls.
D. M. Cool, Faribault.
C. O. Cooley, Madelia.
Geo. M. Coon, St. Paul.
Walter Courtney, Brainerd.
F. J. Creesey, Granite Falls.
Edwin Crone, Kirkhoven.
D. S. Cummings, Waseca.
Nels G. Dahlstedt, Minneapolis.
A. W. Daniels, St. Peter.
C. E. Dampier, Crookston.
A. M. Davis, Howard Lake.
E. J. Davis, Mankato.
Wm. Davis, St. Paul.
H. W. Davis, St. Paul.
David Day, St. Paul.
W. W. Day, St. Paul.
Godfrey Deziel, Minneapolis.
Wm. Dinwoodie, St. Paul.
L. P. Dodge, Farmington.
Frank A. Dodge, Le Sueur.
Chas. Dolan, Waterville.
J. W. Donnell, Monticello.
Ignatius Donnelly, Jr., St. Paul.
J. H. Dorsey, Glencoe.
J. A. Dubois, Sauk Center.
R. C. Dugan, Dover.
W. T. Duncan, Fergus Falls.
J. H. Dunn, Minneapolis.
J. B. Dunn, Shakopee.
A. W. Dunning, St. Paul.
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J. B. LeBlond, Sioux Falls, S. D.
A. Mueller, Bienne, Switzerland.
A. Ortmann, Minneapolis.
J. W. Reed, Lime Springs, Iowa.
Nicholas Senn, Milwaukee, Wis.
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F. R. Smith, St. Paul.
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Francis Atwood, St. Paul.
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H. C. Hand, St. Paul.
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S. S. Wallbank, Duluth.
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J. S. Whilldin, St. Paul.
Samuel Willey, St. Paul.
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ON THE THIRD WEDNESDAY IN JUNE,

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